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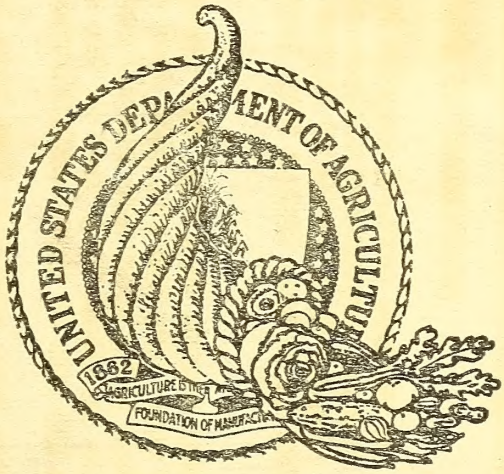
THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

Vol. IX, January to December, 1937

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THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., January 1, 1937 No. 1

DEC 16 1937
M. H.

Productive Yesterdays-- and Confident Tomorrows

In announcing a series of lectures on "Department of Agriculture Objectives," Dr. A. F. Woods, Director of the Graduate School, declared that employees have said they want to know what it is all about; they want to know and should know, the purpose of the work they are doing, and just how it is contributing to the public welfare. "They should know and feel the importance and usefulness of their particular job," he said, "and how it contributes to the public good. This develops greater interests and satisfaction all around."

Efficiency engineers are continually pointing out that what an organization is doing must commend itself to the employees. Workers need to have a sense of progress, development and growth. They can do their best only when they feel that what they are doing is helping to accomplish something really worth while. Thus we are particularly fortunate in being connected with activities that have a clear-cut appeal of high-minded public service; service that is not merely desirable but absolutely essential. Federal aid for agriculture is not only merited by the position the farmer holds in relation to the general welfare of the nation but also because he must face hazards of weather, plant diseases, insect pests and the like with which the individual or even the group of individuals cannot hope to deal efficiently. Plant diseases, for example, become increasingly serious with the growing simplification and extension of means of communication, so that those that were not particularly serious in former times now devastate the more closely packed plant communities. We need to search the world for hardier and more disease-resistant sorts and to breed new varieties adapted to special conditions. Often a disease organism will adapt itself to new conditions, making it necessary for the plant breeder to create still other and different disease-resistant types.

"Properly to fulfil its function, research must be relatively continuous in plan and execution," said Mr. Richey in one of his annual reports. "Undue modification to meet ever-shifting needs results only in fragmentary accomplishments in any direction with a minimum of value to anyone. Research prosecuted to successful solutions, on the other hand, builds a cumulative store of information upon which to draw when need arises."

Since fruits and vegetables constitute a vital part of the food supply of our people, we have been in an excellent position to appreciate the truth of Mr. Richey's statement. Time and again we have had to meet a demand for prompt and accurate information as to horticultural crops suited to special needs or conditions. Our store of research information has been invaluable in meeting these demands.

The Ounce of Prevention

Sometimes we help growers most by advising against the planting of a crop. In this way we help check booms in horticultural crops of doubtful commercial value or prevent the planting of crops in unsuitable regions. Quite a few of our publications are "storm warnings," issued to caution growers. The splendid publications being issued in connection with Dr. Boswell's project on vegetable variety standardization and description actually fall in this class, cautioning growers that the best results may be obtained only when the superior varieties are grown.

The Jerusalem Artichoke

The Jerusalem artichoke is a good illustration of the need for these warnings. Studies by Dr. Boswell and his associates (in the Department and in the cooperating State experiment stations) provided a fund of information with which to back up our caution against the extensive planting of this artichoke. A widespread interest has developed in it of late years, largely as a result of its possible value as a source of raw stock for the manufacture of levulose and alcohol, an interest that has led to unusual optimism concerning the profits to be made from growing the crop. The culture of Jerusalem artichokes offers no more possibilities for easy profit than numerous other farm crops that are extensively grown and for which a much wider market awaits.

The first edition of Technical Bulletin No. 514, "Studies of the Culture and Certain Varieties of the Jerusalem Artichoke," was soon exhausted and a new edition had to be requested within less than six months from the time the first edition was off the press. The bulletin was prepared by Dr. Victor R. Boswell, C. E. Steinbauer and M. F. Babb of our Division; W. L. Burlison, head of the department of agronomy of the Illinois Agricultural Experiment Station; W. H. Alderman, head of the department of horticulture of the Minnesota station; and H. A. Schoth, agronomist of the Division of Forage Crops and Diseases, Bureau of Plant Industry.

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The bulletin has added interest as a splendid illustration of effective cooperative publication. The individual plot data obtained by the several writers, together with notes and comments, were sent to Dr. Boswell, who prepared the tables, made the statistical analyses, and prepared a rough draft of a report, which was then jointly worked into form for publication; a plan that insured uniformity of treatment of the material while enabling each investigator effectively to bring out important local observations and interpretations of results.

Intangible Service

In one of his field reports, Milo N. Wood wrote: "We have, of course, been able to prevent a great deal of planting of almonds under wrong conditions, and I am still hammering on that. I feel that this saves the growers thousands of dollars every year." It unquestionably does and at the same time it is an excellent example of a type of intangible service the Division renders--service that does not often show up in annual reports or publications, but which is vitally important to the grower.

Another illustration is the case of the Fort Valley, Ga., peach grower who was fortunate enough to be able to consult Dr. Lee M. Hutchins before going ahead with a plan for a large peach orchard near the Florida line. This grower had selected the new location with the idea that he would gain an advantage over central Georgia growers through the earlier ripening of varieties. Dr. Hutchins, backed by his fund of research information, was able to show him that the undertaking would probably fail since the accumulation of hours of cold at 45°F. or below during the rest period in the region is not sufficient to stimulate the peach trees to break dormancy with the arrival of spring.

Sometimes We Hand out a Lemon !

Florida has long produced excellent oranges and grapefruit, but in the past it has not been able to grow lemons satisfactorily--not even enough to supply its own needs.

We have handed Florida growers a West Indian lime - Genoa lemon hybrid that grows and thrives in the State and produces a fruit that looks like a lemon, tastes like one, and serves every purpose of one. It has been named the Perrine in honor of Dr. Henry Perrine, horticultural pioneer of southern Florida. It is already proving a success in commercial culture, more than five hundred acres being planted at present.

The fruits, as stated, are of typical lemon shape and flavor, with thin skin, and contain more juice than any of the standard lemons. This juice, too, is uniformly high in acidity, averaging about 6.50 percent. The fruits are already selling quite well in the markets where they are known and this one contribution will probably contribute a dividend sufficiently large to offset the cost of all our Citrus breeding work.

Apples

Technical Bulletin 491, "Soil Moisture and Irrigation Investigations in Eastern Apple Orchards," by J. R. Magness, E. S. Degman and J. R. Furr, is an excellent illustration of the manner in which research works to safeguard the grower, for it reports on important investigations that it is safe to say the average apple grower did not even know were needed!

The bulletin discusses the effects of soil-management practices on soil moisture and the value of irrigation under eastern orchard conditions, a surprising thing to us, since most of the apple orchards in the central and eastern parts of the United States are without irrigation, the trees depending upon natural rainfall and the water-holding capacity of the soil for moisture supply throughout the growing season. Under these conditions--a matter which has been generally overlooked--it is of decided importance to know the amount of water available to the trees that can be held in the soil within the root zone of the tree. Periods of from 1 to 2 months when very little rainfall occurs during the growing season are of relatively frequent occurrence in the eastern apple growing region. Unless the moisture-holding capacity of the soil is sufficient to carry trees through such periods, poor growth and development of fruit will result.

The experiments reported on were based on test plots laid out under three soil conditions in a commercial apple orchard near Hancock, Md. Water for the experimental irrigation of these plots was available from a large spring and was delivered to the plots through a stationary spray pipe system. Water was applied to all irrigation plots by the overhead sprinkler system.

During 3 of the 4 seasons during which the tests were conducted, the total rainfall from May 1 to October 31 was above normal, yet in each season apple trees in rather shallow shale soil showed reduced fruit-growth rate due to moisture shortage at some time during the season. The studies further indicate that the size of the fruit at the end of a season will be reduced in proportion to the length and duration of a drought. Following even a short period of reduced growth rate, the ultimate size of the fruit will be reduced accordingly. The yield of Rome Beauty apples, for example, was increased more than 50 percent because of increased size of fruit, due to irrigation when needed.

The color of apples is dull and lifeless when the ripening season occurs while trees are suffering from lack of moisture, while moderate available moisture during the late-growing season has given maximum color, both in brightness and in area. Excessive moisture, on the other hand, tended to reduce the amount of color. The first measurable effect of reduced moisture supply on the functioning of apple trees, it was found, is an earlier daily closing of the stomata. This occurs prior to a reduction in the growth rate of the fruit.

The difficulty about discussing our work with apples is that it is too extensive to permit of a satisfactory brief summary. This is somewhat paradoxical, too, for apple trees grow and bear fruit of a kind under almost any condition and so are usually given less attention than almost any other fruit crop. But not by the research worker! Conservative estimates place the annual savings to the apple industry resulting from our work at not less than ten million dollars.

This is undoubtedly too conservative an estimate, for the disease-prevention activities alone represent more than that. The developing of control methods for apple bitter rot would represent half that amount; and the work in the control of apple scab as much. The oiled wrapper and shredded paper methods for the control of apple scald not only pay a million-a-year dividend; they actually transferred the apple to the list of staple commodities. It wasn't always there, you know. Only a comparatively few years ago apple growers had to rush their fruit to market regardless of danger of oversupply and low prices. To hold it would involve risk of even greater loss through scald and decay.

The investigations that have, deservedly, received wider attention than any others of late years have been those conducted by Dr. Magness and his associates on leaf area in relation to fruit production. They have shown conclusively that from 30 to 50 good leaves are required to build the food materials to develop one good marketable apple and to form fruit buds for the following season. Here is laid down the scientific foundation for practices in fruit thinning and fertilizer and cultural practices with apples. A report on the work even found its way into the World Almanac!

Farmers' Bulletin 1752, "Spray Residue Removal from Apples and Other Fruits," lately revised by M. H. Haller, Edwin Smith and A. L. Ryall, is a standard textbook on this subject, and vitally important to the fruit grower and handler. Dr. Gardner and his workers in the Nursery Stock section of the Division have handed the nursery industry of the country a certified check for one hundred thousand dollars the past year by convincing them that this country can produce the four or five million apple understocks we have been in the habit of importing. The development of the evaporated apple industry in the Pacific Northwest was greatly helped by our studies on variety suitability; similar studies safeguard the manufacturers of apple juice from serious losses.

Peaches.

Speaking of leaf area, one of the most interesting papers coming to the attention of the News Letter during the year was presented by Dr. F. P. Cullinan at a meeting of the New York State Horticultural Society last January. It discussed recent trends in peach culture.

"In our thinning experiments we have found that about 40 good, healthy leaves per fruit are necessary to give minimum leaf area required to produce peaches of good size and color," he said. "On ringed branches, when the ratio was reduced to 5 to 10 leaves per fruit, the quality of the fruit as detected through flavor, juiciness, and texture was inferior to that produced on branches with a higher leaf-to-fruit ratio. With the higher leaf ratio, too, the sugar content and color of the fruit were increased. The flavor of fruit from the ringed branches with a small leaf area was similar to that from heavily loaded, unthinned trees."

Maintaining an adequate healthy leaf surface throughout the season is thus one of the most important requisites to producing fruit of good size and quality. If the leaf surface on the peach tree is reduced early in the season by arsenical or other spray injury, or by diseases such as leaf curl and bacterial spot, which frequently cause severe defoliation, the size and quality of the fruit will be affected.

Another important factor is soil moisture. The peach differs from the apple in the seasonal growth rate of the fruit. There is a definite periodicity in its development. During the early part of the growing season the young peach develops very rapidly, increasing in volume principally in the axial and suture diameters. This period of about 60 days is followed by one of relatively slow development for 40 days. Finally, a third period of growth is noted which starts about 30 days before final harvest. This is a period of very rapid development, in which the peach increases markedly and fills out in cheek diameter. This is usually spoken of as the period of final swell, and this is when moisture shortage may be an important factor limiting the size of the fruit, and should be watched carefully.

"The future outlook is not discouraging," he explained. "There is an opportunity for those who may be interested in making new plantings to replace some of the trees which have gone out of production in the last few years. This should not mean an increase in the number of bearing trees or total increased tonnage. Increased yield per acre, or a reduced acreage obtained through more careful production measures, will result in lower production costs per acre."

The trend in planting new orchards, he declared, is toward more care in the selection of sites. The planting of varieties ripening earlier than the Elberta is also meeting with favor as this serves to lengthen the ripening season and helps effect the distribution of high quality peaches over a period from June to October. Because of the difference in time of ripening in the various latitudes, this should insure more adequate distribution of the peach crop in the consuming market. In this connection, of course, we are prepared to offer some new peach varieties of excellent promise. Two, the Maxine and Leeton, produced in connection with the peach breeding work at Palo Alto, Calif., have already received their commercial baptism and are doing very well indeed.

Handling, Transportation and Storage

A successful crop depends not merely on the quantity or even quality. The farmer must be able to get his product to the markets in good condition at the right time to secure satisfactory price returns. He must have exactly what we are giving him--expert advice on handling, transportation and storage, and market diseases of fruits and vegetables.

We need go back only a comparatively short time to find commercial peach growing, for example, limited to a narrow fringe near the Middle Atlantic tidewater from Long Island Sound to Cape Charles, and in a similar narrow fringe on the south shore of Lakes Ontario and Erie and on the eastern shore of Lake Michigan. These were the only regions within a day's reach of consuming markets--and 24 hours represented about the maximum life of a mature peach under conditions of handling and shipping then prevailing.

It was not until about 1890 that a refrigerator car suited to the transportation of fruits and vegetables was developed, and a refrigerator-car icing service established. So vital was this contribution to the fruit and vegetable industry of the country that it soon spread over the United States and practically abolished distance as a limiting factor in the shipping of farm crops. Previously, of course, the grower had to depend on local markets for the disposal of his perishable crop.

A pioneer in this important field, we have played our part in the development of these improved handling, transportation and storage methods and equipment. Our light, hidden under the proverbial bushel for many years, made itself apparent in decided fashion only as recently as early World War days when we moved into the million-dollar-a-year dividend class by working out specifications for an improved refrigerator car. This car, based on the store of research data accumulated in our investigations, won instant approval, filled a vital need, and has gone on to save shippers and handlers, the railroads and consumers, millions of dollars annually.

These handling, transportation and storage investigations are a good bit more than mere dividend producers. The success of highly specialized agricultural enterprises in remote districts where, however, climate and other factors especially favor production, is largely attributable to the use of the successful economical means of transportation and handling we have developed. Without these, it requires little imagination to picture the Imperial Valley of California, for example, remaining a desert, or at best an alfalfa and stock country; and the Rio Grande Valley of Texas being anything but the "Winter Garden of America." And these examples could be multiplied many times. We can think of the work under this project as enabling large and highly specialized agricultural industries to flourish and towns and communities to exist where otherwise would be only the lonesome prairie or the purple sage.

The handling, transportation and storage and market diseases investigations take on added importance, as Dr. Charles Brooks has pointed out, from the fact that whereas spoilage at harvesting time involves only the cost of growing the crop, a loss on the market adds to this the cost of harvesting, packing and shipping. A small crop, too, may sometimes have its compensations in higher prices, but spoilage of any part of a shipment is likely to ruin the market for the sound product as well as the diseased, as neither the dealer nor the consumer cares to take a chance on fruit or vegetables that are showing signs of spoilage.

Thanks--a million!

In a paper read before the meeting of the American Chemical Society at Pittsburgh last September, D. F. Fisher and D. H. Rose commented on the fact that in recent years when every industry has been faced with the necessity for cutting costs, our investigations in this field have been concerned very largely with the development of more economical methods of refrigeration.

In earlier years when prices were relatively higher and returns were good, emphasis was naturally placed upon the use of methods that would reduce to the minimum every hazard of spoilage and every condition that would adversely affect the appearance of the product, and would thus deliver only the highest quality goods to the market. The successful shipment of oranges from California was effected primarily by showing the industry how to control blue-mold decay by the use of careful handling methods and satisfactory transit refrigeration.

Based on the results of these earlier studies, some of the most recent investigations of the Division have been directed to the possibility of modifying transit-refrigeration methods. It has been found that instead of reicing orange shipments once every 24 hours, as was formerly the practice, only one reicing in transit is necessary, if the fruit is cold at the start. With this fact demonstrated, and the development of many details of procedure to cool the fruit without excessive cost, a reduction in the refrigeration rate was secured which saves the industry upwards of $40 a car--a saving of a million dollars or more annually.

In Technical Bulletin No. 505, "Refrigeration of Oranges in Transit from California," C. W. Mann and William C. Cooper have an enlightening presentation of our work in this field. Twenty-nine refrigeration tests were made during the period of the experiments they report on, and temperature and icing records were obtained on 189 carloads of California oranges in transit to Chicago and New York City. At the beginning of the experiments, standard refrigeration methods were used on more than 26,000 cars--the latest check reported in the bulletin shows our modified form used on 23,920 cars, the old standard type on 152!

Drip Meters

Refrigeration rates for perishable products are set by the Interstate Commerce Commission largely on the basis of the ice used. In the past the matter of measuring the ice used was not at all complicated--nor accurate. One just filled the bins and at the end of the trip took a look at the ice remaining and guessed how much had melted.

Edward A. Gorman has offered a remedy for this situation. He has taken out a Public Service patent (No. 2,057,234) covering what he calls a drip meter. Eddie attaches this device under the car and it catches the melted ice water and measures it. This drip meter will provide accurate data and pave the way for added savings in ice consumption.

Precooling

If the produce can be precooled before shipment, either before packing or even after loading in the car, means for accomplishing which have been developed, the margin of safety in shipments will be correspondingly increased and it may even be possible to economize on the ice used for refrigeration in transit. After a good job of precooling has been done, about the only heat that must be removed by the refrigeration is that which enters the car through the walls, roof and floor. Regardless of the temperature to be used in transportation or storage, however, our studies have shown that the quicker the produce can be reduced to this temperature after it is harvested, the better.

It is estimated that upward of 40,000 carloads of perishable produce were precooled in California alone last year. Precooling often permits the successful shipment of riper and therefore better quality stock. Precooling can also be used to dry wet products by condensing excess moisture on the ice or refrigeration coils and thus reduce spoilage that would otherwise occur in transit.

Precooling needs a good bit more publicity, however, for as W. T. Pentzer and his associates point out in Bulletin 600 of the California Agricultural Experiment Station, "Precooling and Shipping California Asparagus," whereas the precooling of some fruits has been an established practice for many years, few vegetable shipments from California until recently, have been precooled. Many vegetables, such as lettuce, peas, asparagus and celery are fully as perishable as fruits that are commonly cooled and so are greatly benefitted by the removal of "field" heat as soon as practicable after harvesting.

Bulletin 600 gives the results of an investigation conducted by the Division in cooperation with the California Agricultural Experiment Station, represented by R. L. Perry and G. C. Hanna. J. S. Wiant and C. E. Asbury along with Mr. Pentzer represented our Division in the investigations.

New Strawberry Varieties

In general, Dr. George M. Darrow and his associates started out to improve existing commercial varieties of strawberries--but specifically to secure (1) a strawberry of superior dessert quality suitable for culture in the Eastern States; and (2) to produce satisfactory varieties for canning, preserving and freezing preservation. Varieties adapted for eating fresh, you see, are not likely to be satisfactory for canning as cooking tends to alter their flavor, shape and color. For canning one needs a strawberry with firm flesh and a color that might not be considered the best in the raw state. For preservation by freezing, neither the dessert varieties nor the canning sorts are satisfactory.

Some half-dozen varieties have already been introduced into commercial culture from among our thousands of plants of new strawberry crosses. The veteran of these, the Blakemore, already occupies a place in the very first rank. The Redheart and Narcissa are doing quite well, thank you, on the Pacific Coast where one concern last year arranged to freeze 100 tons of the Redheart, paying a premium of 1 cent a pound over the standard variety formerly used.

The Southland is generally regarded as the best home garden variety for the South; the Belmar is doing well in North Carolina; and the Dorsett and Fairfax continue to meet with an enthusiastic reception in the East. The word "enthusiastic" is rather weak! Suppose we let one of our friends say a few words about these strawberries.

"The Dorsett and Fairfax have shown us more real value than any other early strawberries we have seen in our 51 years experience," says a Maryland nursery firm. "In 1934 we stated we believed the Dorsett and Fairfax strawberries afforded the greatest opportunity to cash in on something new and better that we had seen in all our experience. We followed our convictions and planted heavily of both varieties. While we acknowledge that the 1935 fruiting season was favorable, the facts are that in 1935 we picked more berries, better berries, obtained a greater yield per acre, beat the market price more and made a greater net profit than in any year in our 51 years."

A Michigan grower insists that the Dorsett sets a new standard that places it ahead of all others for keeping and shipping. Of the Fairfax he adds that it has a "royal flavor--a real tang of the wild, tempered with the richness and mellowness of its English ancester--Royal Sovereign." On the commercial side, he says of the better returns secured from the Dorsett and Fairfax: "Every one is willing to pay extra for berries that look better, taste better, and are better." As Aunt Jemima would say, "Ain't it the blessed truth!"

Fruit and Vegetable Utilization

In view of the amazing growth of the canning and preserving industries, it is interesting to know that from the very beginning studies of utilization have gone along with the general investigations on fruit and vegetable growing. The work has consisted primarily of comparative studies of varietal groups with reference to their suitability or adaptability for preservation by the various methods; and of the effects of environmental, cultural and nutritional factors upon the quality of the product.

The unique feature of the studies is that they have been planned definitely to accomplish two distinct and separate purposes. The immediate practical purpose has been to find means of making the best possible product out of the jumble of varieties of a fruit or vegetable grown primarily for the fresh market. The second purpose has been to make such comparative physical and biochemical studies of the more generally grown varieties of a fruit or vegetable as would supply some information in biochemical terms of the composition of the variety and the differences between varieties.

The need for prompt and accurate information to safeguard handlers against losses, has led us to make rather extensive use of outside publications in the field. Three of the most recent contributions discuss the suitability for freezing preservation of garden or snap beans; peas; and a number of varieties and strains of sweet corn--all as grown under eastern conditions.

The papers are somewhat unusual in that they were prepared so as to have each study complete in itself, avoiding giving the reader cross references to inaccessible material for essential parts of the story. All furnish information of a type needed to safeguard both growers and handlers against the losses inevitable from using inferior or unsuitable varieties. This information is proving especially necessary in connection with the astonishing development of the freezing preservation of fruits and vegetables.

We had one very striking illustration of the importance of the work when we were able to show a producer how to put up a satisfactory and marketable product after he had spent more than $50,000 unsuccessfully in trying to work out the problem for himself through the trial and error method. Another producer, unfortunately, did not consult us in time and so lost $200,000 through engaging in the large scale packing of varieties we had shown to be unsatisfactory for the purpose.

Aside from their value to the grower and handler, these studies are vitally important, of course, in getting a better product into the hands of the consumer, and at a lower price. Such a publication as Farmers' Bulletin 984, "Farm and Home Drying of Fruits and Vegetables," by Joseph S. Caldwell, of course, is prepared directly for the farm or home operator--giving him directions for preparing, drying and subsequent storage and care of each of the more important fruits and vegetables.

Potatoes

Some years ago, while serving as chairman of the program committee of the Washington Botanical Society, Dr. George M. Darrow made the annual banquet a splendid demonstration of our horticultural achievements. There was Muscadine grape juice supplied by Charles Dearing; some of Jagger's Imperial lettuce varieties; Marglobe tomatoes; new string beans; olives, Panariti currant grapes; an excellent fruit cocktail (oranges from Shamel and Pomeroy; strawberries and Young dewberries from Darrow and Waldo); and decorations by our section of floricultural and ornamental horticultural plant investigations.

At this banquet, Dr. Charles F. Clark offered for test one of his new potatoes, a seedling variety originated by him in 1923 by crossing two other seedlings whose parentage traced back to the commercial varieties known as Rural New Yorker, Busola, Aroostook Wonder and Sutton's Flourball. This seedling was one of several developed for resistance to virus diseases, but it was the concensus of opinion among the diners that it had a promising future based on its excellent quality, regardless of any disease resistance it might possess. This potato, later named the Katahdin, is already better known than the mountain for which it was named and appears likely to prove an even bigger proposition.

Better still, another of the hybrids, the Chippewa, is actually surpassing the Katahdin in some places. It appears to be more widely adapted than the former and just as promising for all-round qualities. Both are described in Circular No. 374, "The Katahdin, Chippewa, and Golden Potatoes," by C. F. Clark and F. J. Stevenson. The Golden is a yellow-fleshed variety, grown by some 50 or 60 growers in Maine and a few in the Upper Peninsula of Michigan. It is not widely adapted but where it can be grown successfully is much prized because of its very high yields and its scab resistance.

Another potato hybrid recently introduced is the Houma, selected from a group of our seedlings by J. C. Miller of the University of Louisiana because of its high quality and adaptation to the Houma potato growing section of that State--whence it gets its name. It is showing very unusual promise.

In connection with these new varieties it is interesting to note that a Commission sent from the Argentine to this country to find the seed varieties best suited for combating the widespread distribution of virus diseases in the potato growing regions of Argentina, picked the Katahdin and Chippewa. More than 40,000 bushels of seed potatoes of these varieties were purchased by the Commission, which would have taken even more had they been available. The purchase is important in that it is likely to open up a new market for American seed potatoes.

Bulletin 271, Michigan Agricultural Experiment Station, "The Katahdin Potato in Michigan," by H. C. Moore and E. J. Wheeler, gives some interesting facts concerning the variety in that State and says that an outstanding characteristic that should make it appeal to most growers is its ability to produce satisfactory yields of good type tubers even under heat and drought conditions. It sets fewer tubers per hill than the Rural and develops them earlier, a characteristic that often enables it to surpass the Rural in yield and marketable potatoes, particularly when the season is unfavorable for the Rural varieties. Four seasons unfavorable for Rurals but in which the Katahdin has been grown successfully have occurred in Michigan since 1930, so we find that most of the 500,000 bushels--yes, we said 500,000!--of the Katahdin grown in Michigan in 1935 were kept for the 1936 planting.

Preliminary tests have shown that the Katahdin as grown in Michigan is superior to the standard varieties in market quality and is equal at least to the Rural in cooking quality. In the fall of 1935, 53 bushels of Katahdin were distributed in bushel lots to 53 hotels in Michigan, Ohio, Illinois and Indiana. Fourteen hotels had a few criticisms to make but thirty-nine reported that they found the Katahdin an excellent potato for baking, boiling, and frying and that they were well pleased with the color and texture of the cooked product. Many of the hotel chefs made favorable comments on the attractive appearance of the Katahdin and were well pleased with its smooth, thin skin and shallow eyes that reduced waste in peeling. And a recent letter from a collaborator tells us that the Katahdin potatoes have been selling in Detroit at some premium over Maine Green Mountain potatoes and considerable premium over Michigan Russets!

Incidentally, this potato breeding work is an outstanding illustration of cooperative endeavor. The plant introducers bring us promising sorts from all over the world. The plant breeders and horticulturists make the crosses and grow the progenies. The plant pathologists take disease notes on the seedlings. And the home economics experts make the cooking tests. Too, of course, the workers of the various State Experiment Stations, together with private growers, help us give the new varieties tests under field conditions over a wide range of territory.

It is, of course, only a comparatively few years since it was discovered that the so-called "running out" of potatoes was not due, as commonly supposed at that time, to growing potatoes year after year from the same stock, but was caused by the attacks of certain virus diseases. This discovery gave the plant breeders a point from which to start. And in this connection, there is a man by the name of Schultz--Dr. E. S. Schultz--who deserves a lot of credit for his outstanding pioneer work with viruses, work without which it would have been impossible to make the tests for certain definite virus diseases. He is still very much on the job with us.

A Made-to-Measure Tomato Variety.

An interesting member of the group of tailored-to-measure varieties now becoming a conspicuous part of the plant breeder's program, is the Glovel tomato. In Circular No. 388, "The Glovel Tomato," by William S. Porte of our Division and H. S. Wolfe and W. Eifield of the cooperating Florida Agricultural Experiment Station, we are told that the new scarlet-red local-market and shipping variety was developed as a cross made in the Department's greenhouse at Washington, D.C. between the Globe and Marvel tomatoes. It has been outyielding both the Globe and Marglobe at Homestead, Fla. in tests extending over several years, and has proved to be well adapted for use as a high-class shipping tomato, especially in those areas where the soil is infested with fusarium wilt or in sections subject to outbreaks of nailhead rust.

The vine growth is vigorous and distinctly more open than that of the Marglobe, with the fruit partially exposed. The point is that this open type of growth is not an accident--selection was deliberately made for this character. The open type of growth is favored by many growers because the mature-green fruits are readily seen by the pickers, and not only is time saved in picking but also fewer fruits are overlooked--and they are more likely to be uniformly picked at the right stage of maturity.

Research and Technology

Tailored-to-measure hybrids, developed to meet special conditions, are merely another illustration of the manner in which agricultural research has kept pace with industrial research. It goes hand in hand with improvements in machinery and equipment When, as Secretary Wallace pointed out sometime ago, it is possible for the farmers of a nation to increase production 50 percent while the crop acreage increases but 25 percent, a thing that has been done in this country within the last quarter of a century, we know that research has been at work.

Between 1910 and 1930, he pointed out, the output per worker increased 39 percent in manufacturing--and 41 percent in agriculture. In the five years between 1922 and 1926, one of the most interesting periods in agricultural history, agricultural production increased 26 percent while crop acreages remained stationary and the amount of labor in agriculture was actually decreased.

Or, he said, put 1936 against 1787, the year in which the Constitution was framed: Then it took 19 persons living on farms to produce enough for themselves and one person in town. Today 19 persons on farms can produce enough for themselves and for 66 living in town!

The efficiency of the farmer has increased to such a degree, in fact, that the critics have been forced to about face. They no longer talk of agricultural inefficiency. Their amazing complaint now is that the farmer is too efficient, thanks to the aid of research. They even go to the extent of declaring that agricultural research is no longer necessary or even desirable, since the farmer is already producing too much.

When crops go to waste on the farm while breadlines form in the cities, we are not facing a problem of too much production. The problem is one of distribution. Waiving this, however, it may be admitted that the farmer would benefit by fitting his production to the demand. What the critics usually overlook in this connection, however, is that the manner in which the reduced production is secured is all-important; and without the aid of research is quite likely to be wrong. It doesn't help the grower to reduce production and increase the cost of production; for his profit still continues to be the difference between his cost and his selling price. When he leaves reduction to weather, diseases and insects, he has smaller crops, but a higher cost of production. Reductions of this type fall unevenly on the grower and on different regions, a situation that is very unsatisfactory from a national agricultural standpoint.

Research--and Overproduction.

Research is prepared to plead "Not Guilty!" to the charge of being an accessory in the crime of overproduction. It really doesn't concern itself with increasing the volume of production. It takes no heed of the size of the farm. Its interest is in reducing the cost of production. A crop rotation that enriches the soil means more per acre without increased cost; so does a new variety that outyields an older one, or is hardier and more disease resistant. Improved methods of harvesting, handling, transportation and storage help in securing a better product that may be sold at a lower price to the consumer while still affording the grower and handler a satisfactory profit.

Research is not undertaken merely to gain knowledge that may or may not be useful. It is undertaken for a definite purpose. All of our projects are correlated with those of the State experiment stations and other research organizations not only that we may avoid duplication, but that we may take advantage of the work already done in the field concerned. We find out what has been done--and go on from there. Workers in pure science sometimes seek to discover nature's fundamental secrets without much thought of their application to everyday affairs, but the agricultural research worker is concerned with the practical application of his discoveries. He has a definite program--tasks assigned in response to actual needs.

We know where we are going; we know how we are going--and we are on our way!

Vol. 9 No. 1 January 1, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., January 15, 1937 No. 2

Mr. Richey's Annual Report

"It is the function of the Bureau of Plant Industry, under the mandates and within the limits of its appropriation, to attempt the solution of the various problems of the plant industries," he says. "The attack on these problems is through research, the results of which, when successful, lead step by step to the ultimate goal of increasing stability of production, improving the quality of the product, and decreasing the cost per unit produced."

Four of our contributions toward this goal are the Leeton, Maxine, Stanford and Ellis peaches, developed in connection with our stone fruit breeding work in California. All are of decided commercial promise. The first two are freestones; the other two are firm-fleshed clingstone varieties of the canning type. As a contribution to decreasing the cost of production we offer the savings resulting from our copper phosphate spray now proving effective in the campaign to control pear scab. Some of our new seedless grape varieties are attracting more than ordinary attention; and we have under test at present three nematode-resistant stocks for vinifera grapes that show decided commercial promise. Irrigation experiments with lemons indicate that as a guide to proper irrigation practice the growth response of the fruit has advantages over soil-moisture determinations.

Thinning the stand of trees in closely planted orchards in the Southeast has greatly improved tree vigor and the nut production per tree, the reports says, but has reduced, temporarily at least, the acre yields. The pruning of young pecan trees to train them to a certain form delays the time when they come into bearing. Turning to almonds, two of our new varieties have made such an excellent showing in certain districts of California that they now appear certain to entirely supplant the Ne Plus Ultra types there.

The report contains specific mention of three of our new lettuce varieties or strains. The first mentioned is Columbia No. 1, a crisp heading sort similar in appearance to the New York, and adapted to culture in the eastern part of the United States; the second is the Imperial 847, a strain showing decided resistance to brown blight, promising as a mid-season or summer crop lettuce for the Salinas-Watsonville district in California; and the third is Grand Rapids No. 1, a mildew-resistant strain of the Grand Rapids variety, especially valuable for greenhouse culture.

Ordinarily it is an excellent idea to keep a lookout for No. 1, but in the case of a Refugee stringless type of bean for canning and market garden, very resistant to mosaic, keep an eye on U. S. No. 5. U. S. No. 1 was issued some time ago and is tolerant to mosaic, but the No. 5 now being released appears to be immune. Our new Glovel tomato is proving more vigorous, heavier yielding, and less susceptible to cracking than the standard Globe variety (one of its parents), and is highly resistant to fusarium wilt and nailhead rust. The Chippewa and Katahdin potatoes win mention by reason of their continued advance in commercial importance, but the report notes that we are diversifying our attack and hope soon to have a potato combining resistance to both mild and latent mosaic. Scab, too, does a lot of injury to potatoes, and it begins to appear that the only real solution will be the creating of scab-resistant sorts. We have found a number of standard varieties, and one hybrid, that show considerable resistance to scab, and these are being used in an effort to develop scab resistance in several potatoes that are otherwise highly desirable.

In cooperation with the California Agricultural Experiment Station, we have introduced into commercial culture a mildew-resistant muskmelon (No. 45) of the Hale Best type. It is not only resistant to mildew but is distinctly superior in yield and eating qualities to any previously released resistant muskmelon. Perhaps you do not realize that I am talking about "cantaloupes?" We have about resigned ourselves to the fact that the general public cannot be turned away from the name cantaloup, even though it doesn't belong legally to these green-skinned netted melons, so we are beginning the New Year with a pretty definite notion that we are going to be forced to yield a point of scientific accuracy to trade expedience and accept "cantaloup." Well, time marches on. Once it was a compliment to say of a man "I was a stranger and he tooke me in;" but not now. So let it be with muskmelons!

Incidentally, the Division continued to do itself proud in the matter of distributing its product, information. More than one hundred papers were contributed by our workers to the Department's series and to outside journals, and another twenty-five added in the form of "briefs" mimeographed for prompt distribution to meet some special need. And just to prove that we can be ornamental as well as useful, there is the rose understock (Chenault 5892), now meeting with high commercial favor. It comes sufficiently true from seed, too, so that the seedlings possess the desirable characteristics of the original selection.

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

"The data obtained from a preliminary study, jointly handled by all members of our staff, of the factors influencing the sprouting and yield of fall crop Irish potatoes was assembled and calculated during the week by Dr. J. M. Lutz," writes George P. Hoffman on December 19th. "The outstanding points in this year's work, as shown by the data, suggest that:

(1) The old southern method of hastening sprouting by placing the tubers in a moist shady place seemed to be the best;

(2) Ethylene Chlorhydrin seemed to cause injury to the seed pieces;

(3) The use of No. 3 potatoes, either cut or uncut, as seedstock appeared less satisfactory than where the normal size seed piece was used; and

(4) Triumph gave best results with Chippewa second in the eight varieties tested."

Atherton C. Gossard reported December 5th that during the months September, October and November (to November 29th inclusive) the station had only 2.31 inches of rain. During the week from November 30 to December 5, 2.78 inches fell! "This," he comments, "is a pretty fair example of the uneven rainfall distribution in this locality."

Writing November 28th Dr. Hoffman reported that the Laurel, Miss. starch plant ground the last sweetpotato roots for the season on November 22, the later plantings being cut short by dry weather and the operating season shortened in consequence. The total number of bushels of sweetpotatoes made into starch has been estimated at 50,000, with a good yield of starch. "Housewives are much pleased with sweetpotato starch, less being required with better results than when other kinds are used..... Since any factor within economical reach which offers promise of prolonging operating season of the sweetpotato starch factory is looked upon with favor, our delayed harvest studies are offering promise and giving interesting leads. Two years' preliminary studies seem to indicate without question the practicability of delaying the harvest well into December. Consequently, with the development of early maturity, suggested in some of our selections, combined with delayed harvest, the operating season might be prolonged by opening earlier and operating longer.

"The preliminary study of treatments influencing the sprouting and yield of a late summer-planted ('fall') crop of Irish potatoes has given some very interesting leads with the harvest this week. Dry and otherwise unfavorable weather for plant growth and development resulted in the stand being much reduced but the merits of varieties apparently well suited to this region were outstanding. It has been interesting to observe that two of three varieties which gave conspicuously high yield and good quality in our spring-planted tests likewise did best when grown as a 'fall crop.' These varieties were the Triumph (Bliss Triumph) and Chippewa."

NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"At the Washington State Horticultural Society meetings held in Yakima it became quite evident that the deficiency of boron as we have uncovered it in this section is but a minor affair as compared to the deficiency of boron in British Columbia," he comments in his report of December 12th.

"The samples of fruit and the description as given by Wilcox from the Summerland Station was such material as I never saw in this area. The behavior of the apples both in fruit and leaves is totally different from anything we have here except in a minor way. The same reaction was expressed by several investigation men from the State of Washington for their local conditions. Nevertheless, the use of boron is going to be rather heavy in the Yakima valley, especially in the attempt to cure all forms of physiological troubles....

"The failure of several of our exceptionally good walnut crops impresses us more than ever that our cultural program for this section is failing. Two of the finest looking crops in the valley which were produced by orchards looking very good actually turned out to be largely culls. Unfortunately in the press of work we did not maintain the moisture records as we have done in the past but in one of these orchards we do have a fairly good record of moisture. We will now have to work out the wilting point records in order to understand just what happened. It is quite evident that boron deficiency symptoms in Canada were closely related to shortage of moisture. We doubt if this is the case in this section here where we are."

He had written December 5, commenting on the meeting of the Western Nut Growers Association at Forest Grove: "At the meeting one interesting topic was the pruning and care of winter killed trees. We had been advocating that the growers be very slow and careful in cutting back these winter injured trees. At this meeting several growers reported that where they had gone ahead and pruned the trees back this spring and summer according to some advice, the trees were in much worse shape now than those that they had let alone. With the frost damaging the young growth again this fall, it seems more than ever advisable that this program be followed."

DECIDUOUS FRUIT INVESTIGATIONS

Dr. Lee M. Hutchins, writing from Fort Valley, Ga. on December 14, says: "At this season of the year we get many requests for information on the hours of cold at 45° or below that have accumulated. Up to December 8, this figure is approximately 200 hours. This accumulation may be considered as a good average and the crop for the coming year, as yet, is in no way threatened with prolonged dormancy."

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, Amherst, Mass.

Writing from the Cranberry Disease Field Laboratory December 19, he says: "The calculation of the amount of spoilage for the season in berries from our most extensive series of plots has just been completed. The average loss of berries from check plots on this bog up to December 1 due to rots was around 50 percent. At the time the berries were picked there was an average of about 20 percent of rot present. Bordeaux, either 4-1-50 or 5-2-50, two or three applications, reduced the rot to about half of that in the check plots. There was some variation in different parts of the bog due either to holdover effects of treatments in 1935 or to local differences in bog conditions."

He had written earlier: "A second examination of cranberries stored under different conditions including storage at 30, 35 and 50°F. was made by the Massachusetts Experiment Station the week ending December 5 so that I was again able to see the results. The statements made with reference to the first examination made about two weeks ago apply also to the results shown by this examination. Storage at 50°F. appears to be very satisfactory for reducing the amount of spoilage in cranberries and at the same time permits a maximum development of color."

R. B. Wilcox, Pemberton, N. J.

"On December 4th a number of blueberry growers heard Prof. Clarke of New Brunswick describe his technique and results of growing blueberries under mulch. The method has not been suggested as being feasible commercially, since it is more expensive than cultivation on an acre basis, and presents several commercial difficulties. It seems to have advantages, however, for the very small grower or for a backyard garden."

Elmer Snyder, Fresno, Calif.

"Increasing interest has been noted in grape rootstocks in the Fresno section by the number of growers visiting the station and by requests for information along stock lines. Some older vineyards are being pulled because of weakness due to phylloxera or nematode injury. Field trips have been made to note phylloxera and nematode infestations in commercial vineyards. Commercial nurseries state it is becoming increasingly difficult to sell own-rooted vinifera vines. In other words, the growers are finally becoming stock-conscious in the San Joaquin valley."

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASES INVESTIGATIONS

W. T. Pentzer, Fresno, Calif.

Writing on activities and observations for the final months of 1936, he says "Several additional precooling tests were made during November on grapes, testing the effect of chopping ice finely in the bunkers on air blast temperatures and cooling and ice meltage rates. The handling of the ice in the car bunkers is a controversial subject among precooling agencies and growers and shippers who use precooling equipment and there is need for actual evidence on the subject.

"Our experimental grape pack was prepared October 29, just before the second rain of the season. A large percentage of the 3600-3700 car-lot pack of Emperor grapes will be treated with our method of mold control, and in the experimental pack this season we have attempted to cover the various commercial methods of application of sodium bisulphite to grape pads and sawdust so that the industry will have experimental evidence for guidance next season.

"In addition to the grape work, requests for assistance in the storage and handling of other commodities have been met insofar as time permitted. The question of the best temperature for the storage of green olives was brought to our attention by a grower and shipper and we could find little information on the subject, so stored a small quantity at various temperatures. The eastern markets absorb a limited quantity of green olives, but in event of an oversupply, a considerable sum could be realized per lug if they could be stored for about a month. Hence the interest by growers and shippers in the storage of part of their crop until the peak of the movement has passed. A serious discoloration of the flesh was observed at 32, 36 and 40°F. decreasing in seriousness with an increase in temperature, and no discoloration as observed at 50°. The latter temperature, however, did not prevent ripening. These results are of interest since the only recommendation found for olives was 32°F. by one author.

"At the request of pear growers and shippers in the Santa Clara valley, an experimental pack of pears was made, trying various types or wraps developed for the control of gray mold (Botrytis cinerea) in storage.

"Until early December the days were warm and bright and no killing frosts had occurred, resulting in the most favorable grape harvest season in several years. Then came several killing frosts, with an orchard minimum of 27°F., with some damage to vegetable crops. Rainfall for the season was slightly above normal."

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

Gone with the Wind! Shortly before Christmas I had an opportunity to watch D. F. Fisher and R. C. Wright unpack what I understood to be their first air transportation shipment--cut flowers sent to Washington, D.C. from San Francisco by way of Seattle. These flowers looked 100 percent all right to me, but these transportation experts were not satisfied and insist that they can do a whole lot better next time. It seems that the weather en route didn't live up to expectations--or, rather, down, since it was not cold enough. They propose to do something about it.

The point is that many cut flowers are shipped from the Pacific Coast. Up to now the shippers have been forced to accept a considerable percentage of loss through freezing damage. So our problem is to perfect a shipping container that will protect the flowers from this injury. The problem is complicated by the fact that flowers represent a very small amount of solid material and therefore but a small volume of stored heat. Ordinary insulation therefore is not enough to protect them from damage by freezing while en route.

The containers used for the shipment I saw were ordinary flower boxes. These were wrapped with about 30 layers of wet newspaper and then placed in a corrugated box which was wrapped with about 15 layers of dry newspapers. The idea, if I get it correctly, is that when the temperature en route drops low enough the wet paper will freeze and the liberated heat (heat of solidification to you) being confined by the dry paper insulation will keep the contents of the package at about 32°F. for several hours. The danger point is 30°F. or lower.

As I say, the flowers looked all right to me, and I could have used them to advantage over the Holidays, but I was not left alone with them. The transportation experts, however, figured that the weather on this particular trip had been too warm for a satisfactory test--too warm to freeze the wet papers, that is. So they propose to do something about the weather. It's about time.

NUT PRODUCTION

Paul W. Miller, Corvallis, Oreg. Report of December 12.

"Preliminary results of greenhouse filbert blight infection studies were also taken during the week. A number of filbert buds on potted trees inoculated just prior to leaf fall by spraying on pure water suspensions of the filbert blight organism are now showing symptoms or disease. Some of the buds have already succumbed to infection. Results of this experiment give added support to our contention that the fall is the most critical period for natural blight infection."

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASES INVESTIGATIONS

Edwin Smith, Wenatchee, Wash.

"On November 30th the Extension Service under County Agent R. H. Sargent held a Soil School for growers, at which C. P. Harley gave a discussion of soil moisture and nitrogen relationships to the physiology of fruit trees.

"Considerable interest was manifest not only in the forms in which nitrogen should be applied but also in the relationship of nitrogen as well as phosphate and potash to the storage qualities of apples. We have not had a continued project on this subject although some attention was given to the keeping qualities of Jonathan apples in relation to different soil moisture contents during 1932. Mr. F. L. Overley has observed the storage qualities of apples from various fertilizer plots for a number of years and his conclusions were that nitrogen affected keeping quality only in relation to its influence upon production of large fruits. Fruits of the same size taken from nitrogen plots and those where nitrogen had not been applied showed no significant difference in the storage qualities. During the past few years orchards in the Wenatchee district have been showing the effects of not applying nitrogenous fertilizers and this, together with the usual corps of mixed fertilizer salesmen, has created a great deal of interest in this subject as was attested by a very large attendance at the school....

"Our weather has been normal for this season, with low clouds and temperatures ranging between 21 at night and 45°F during the daytime (November 30 - December 5). On December 3rd we had a light snowfall which was the first of the season. This week witnessed the first snowfall in the mountains. Precipitation has been abnormally low and most orchards are entering the winter with the soil in an exceedingly dry condition."

ADMINISTRATIVE NOTE

Property Inventory By the time you receive this News Letter most of you accountable for Government property, will have received lists showing the items charged to you as of December 31, 1936. We have already been called upon for our annual inventory report to the Chief of Bureau, so it is VERY IMPORTANT that you check immediately the lists sent you with the property actually on hand, making such corrections as may be necessary. TWO copies of the inventory list, signed, should be returned to us at once. The new property regulations are explicit in placing responsibility for property on the individual accountable. If any non-expendible property in your charge has been transferred, loaned, lost or otherwise disposed of, indicate this and furnish any necessary explanatory comment, "lost certificate," etc. But get the two copies of the corrected list back to us as soon as you can.

ADMINISTRATIVE NOTES

Bid Specifications Another change has just been made in the clauses that must be embodied in all specifications. A notation should be made on your copy of the memorandum in regard to purchases, recently sent you.

Until further notice the following clause and schedule must be written in the body of all specifications, or else written on a separate sheet, attached to the bids, and referred to in the body of the specifications as being a part thereof:

"BIDDER MUST LIST BY ITEM NUMBER AS IT APPEARS ON THE SCHEDULE OF THE ADVERTISEMENT EACH ITEM WHICH IS SUBJECT TO EITHER FEDERAL, STATE, OR LOCAL TAX, AND SHOW THE AMOUNT OF THE TAX PER UNIT UNDER THE APPROPRIATE HEADING OR HEADINGS LISTED BELOW. TAX EXEMPTION CERTIFICATES COVERING EXCLUDED TAXES WILL BE ISSUED WITH PURCHASE ORDERS.

AMOUNT of Tax, Per Unit

Item No.	Federal		State		Local	
	included	excluded	included	excluded	included	excluded

(Continue on reverse side hereof or separate sheet if necessary)

THE UNDERSIGNED WARRANTS THAT EVERY ITEM IN THIS BID SUBJECT TO EITHER FEDERAL, STATE, OR LOCAL TAX HAS BEEN LISTED IN THE ABOVE SCHEDULE AND IF THE ABOVE SCHEDULE IS LEFT BLANK, THE UNDERSIGNED WARRANTS THAT NONE OF THE ITEMS OFFERED IN THIS BID ARE SUBJECT TO EITHER FEDERAL, STATE, OR LOCAL TAX.

SIGNED: _____
(Bidder)

BY: _____

TITLE: _____

ADMINISTRATIVE NOTES

Oaths of Office It is important that those in charge of field stations and all supervising officials who may have to handle appointment papers, see that new employees fill out promptly the oath of office and other papers to be sent to Washington. This is vitally important to the new employee because the date the oath of office is executed must be shown on the first payroll of the new appointee and until we have this information no salary checks can be drawn for him!

Bills of Lading Last October instructions were sent to field employees and others in regard to the use of Government bills of lading. It has recently come to our attention that quite often shipments are received in damaged condition. Under such circumstances a statement should be made in the place provided on the original copy of the bill of lading before it is given to the freight or express agent. If the memorandum copy of the bill of lading is available the same notation should be made on it before it is sent to our Business Office; or if the memorandum copy (yellow copy) is not at hand a note should be sent to the Business Office explaining the trouble--of what the claim consisted, the extent of the damage, etc. We need this information here in checking up on claims made.

Lowest First-Class Transportation. Attention is again invited to the fact that the act of March 3, 1933 (47 Stat. 1516) eliminates the possibility of the use by Federal officers and employees in a travel status of superior transportation accomodations at Government expenses. Payments to carriers for transportation furnished upon Government transportation requests, that is, are restricted to the lowest first-class fare. Prior to the passage of this act, employees were sometimes permitted to use the superior accomodations--but no more. Now all that will be paid is the lowest first-class fare.

Repairs to Equipment There is no authority under the law to permit us to make repairs to rented or loaned equipment merely for the purpose of sending it back in as good condition as when received. We can only pay for repairs, etc. needed to keep the equipment in good running order for our use while we have it! This means that while we can pay for such repairs as broken axles, worn brake-bands, tires, frozen radiators, broken spark plugs, and similar items which arise directly out of reasonable and ordinary use and are necessary to the proper maintenance of rented or loaned equipment, we are not allowed to pay officially for damage resulting from the wrongful acts of employees or resulting from accidents involving repairs which ordinarily would be covered by insurance. For this reason rental agreements, etc. should not stipulate that such repairs will be made, etc.

ADMINISTRATIVE NOTES

Full name on Pay Rolls. Effective at once, pay rolls MUST list the first name, middle initial and surname of payee or employee, instead of merely initials and surname. Take special note of this because the accounting office has notified us that after February 1 payments cannot be made where employees are listed on pay rolls by initials and surname only. The first name must be given in full.

Annual Leave--Travel by auto. Do not get unduly excited if you get a suspension letter from the Bureau's accounting office in connection with trip by automobile that has required longer than if by train. The suspension letter must state the difference or excess time involved, but actually you are only charged with the number of hours or days which would have been charged for the same period had you applied for annual leave in the usual way. In other words, if the period stated in the suspension letter includes Saturday afternoons, Sundays or holidays, etc. such time is not charged against your annual leave record. From the Bureau accounting office standpoint, of course, the difference between time required for automobile trip and by train must be indicated, but, as stated, your annual leave will be charged with only those hours during the period covered which you would have been required to spend at the office.

Purchases from Federal Prisons A smart man can always catch on; but the really wise man is the fellow who knows when to let go. What I mean is that it is truly amazing how some employees hold on to the notion that they can get away with the purchase in open market of materials obtainable from Federal Prison Industries, Inc. Acting Comptroller General Elliott has just broken the bad news to another misguided purchaser--please remit!

As Par. 3346 of our Department Regulations points out, products of the Federal prisons must be purchased when available, such products including brooms and brushes, clothing, mattresses, hose, rubber, textiles (cotton goods, canvas, cotton bags, etc.), metal castings, transfer cases, etc. As the Acting Comptroller points out in this recent decision the fact that the purchase is made in good faith, or on account of emergency conditions, may not be accepted as authorizing the purchase.

Please take warning, then, that all your orders for all kinds of brushes, brooms, cotton goods (canvas, cotton bags, etc.), metal castings, transfer cases, etc. should be sent to the Washington office which will secure them for you from the Federal Prison Industries or, in case the items cannot be furnished for some reason, obtain permission to buy them elsewhere.

ADMINISTRATIVE NOTES

Expense Accounts It is important that all expense accounts for the period up to and including December 31, 1936, be submitted as promptly as possible after January 1. The Bureau has to submit a report through the Bureau of Internal Revenue, giving total amount paid in salary and reimbursements for the year and if accounts are not submitted promptly they must be included in next year's report.

In connection with the submission of expense accounts, the Division of Disbursement, Treasury Department, has called attention to the fact that many travel vouchers have the addresses so imperfectly given that it is not possible to make prompt delivery of checks. When such incomplete addresses are given, of course, it leads to extra work for those handling and mailing checks as well as in delay in their receipt. In many cases the only address shown on the voucher is the division or bureau in which the employee is working. The Treasury Department prefers to have the traveler's home address given on vouchers so that checks may be mailed to that address. If this is not practicable, and checks must be sent to the office address, please make sure that the voucher shows the name of the Department, Bureau, Division, and building, with room number. Mail deliveries are made by bureaus, etc., so it can be understood that a letter addressed merely to Room 4647 South Building might be sent to the central distributing room of any of a number of Bureaus. So make sure that if your office address is used it shows both bureau and room number.

Gasoline Tax No doubt many of our employees are encountering difficulties in obtaining gasoline without the payment of the STATE gasoline tax. Our attention has been called to a few cases where dealers have refused to sell gasoline without payment to them that includes the State tax.

Dealers have a right to refuse to accept our exemption certificates (Form 1094) and in cases of such refusal it will be necessary for you to pay the cost of the gasoline plus the State tax. Issue an exemption certificate for the Federal tax and give this to the dealer. Then prepare an exemption certificate covering the amount of the State tax and have it signed by the dealer, obtaining from him a receipt in duplicate for the money paid. Attach the receipt and the State tax exemption certificates to your reimbursement account and the Treasury Department will collect the tax from the State. You will be reimbursed for the total amount paid by you.

If the dealer is willing to wait for payment on a form 1034 voucher, two signed copies of this should be secured, to which should be attached form 1094 for the State tax, signed by the dealer.

DIVIDENDS FROM DISEASE-RESISTANT CROP PLANTS

A release from the Department's Press Service summarizes an address by Dr. G. H. Coons of the Division of Sugar Plant Investigations at the American Association for the Advancement of Science meetings, Atlantic City, N. J., December 30. Dr. Coons, retiring president of the American Phytopathological Society, pointed out that American farmers are benefitting by at least $66,000,000 a year because of the breeding and introduction of disease-resistant varieties of crop plants.

The estimate is unquestionably conservative since Dr. Coons includes but 17 of the more important field and truck crops in his summary. This $66,000,000 dividend, understand, is not the value of the crop produced by these new disease-resistant varieties, but represents merely the increase in value of the crop due to their use.

Dr. Coons places lettuce at the head of the vegetable crops, estimating that growers of lettuce received $12,500,000 more last year than they would have received if the new disease-resistant sorts had not been created and introduced into commercial culture. About 90,000 of the 153,000 acres were planted to the new resistant sorts and Dr. Coons estimates that three-quarters of the production on these 90,000 acres was due to resistance against the diseases that made the growing of the older standards varieties impracticable.

In the case of cantaloups, only a third of the 116,000 acres is planted to resistant varieties, but the gain as a result of using these resistant sorts is 100 percent. The disease condition, you see, was so severe that cropping was impossible without the plants that could grow and produce in spite of disease. The disease-resistant varieties of cantaloups account for an estimated $5,000,000 production annually that would have been impossible without their use.

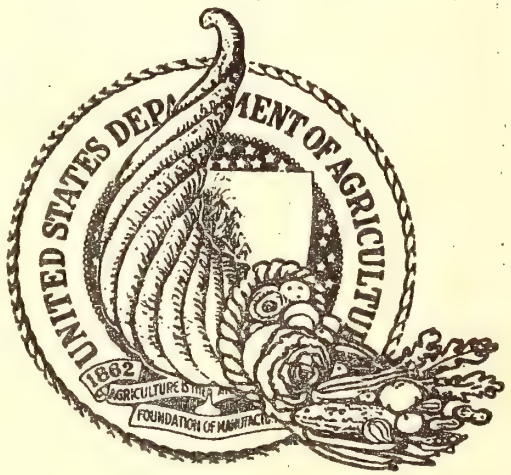
Some four years ago, in response to a Congressional request, we checked over our budgets and prepared an estimate of the total cost of all investigations on fruits, vegetables and ornamental plants since the work was inaugurated. The total was secured by adding the sums appropriated at various times for all of the activities now included in our Division. While the total excludes expenditures for horticultural activities prior to definite appropriations for the work, it also includes work on cotton and cereal diseases, formerly handled by your pathologists, so that the $14,000,000 total seems accurate. Our appropriations since have averaged around a million a year, so that total expenditures for all horticultural activities to 1937 would be around $18,000,000. This sum, you will note, is almost exactly the return Dr. Coons estimates growers are receiving each year from two crops alone--lettuce and cantaloups--and in connection with but a single phase of our work, the breeding of disease-resistant varieties.

Vol. 9 No. 2 January 15, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., February 1, 1937 No. 3

Sweetpotato Chip Making

A woman wearing a hat with a large feather on it, took a seat in a motion picture theater. She felt a gentle tugging at her hat and turned and looked severely at the boy occupying the seat directly behind her. "Does my hat bother you, little boy?" she demanded. "No, ma'am," said the boy. The woman turned back, but her conscience troubled her over the manner in which she had spoken to the boy and finally she turned around again. "Would it help you see the play better if I removed my hat?" she asked. "No, ma'am," replied the boy gravely. "It's all right since I broke the feather off."

This, of course, is a pretty good illustration of efficiency in overcoming difficulties. Pretty good we said, because, after all, the boy really didn't have any such problem as faced Dr. B. C. Brunstetter in working out a satisfactory method for making sweetpotato chips. And Barney has removed his obstacles just as efficiently. If you doubt it, look up Public Service Patent No. 2,056,884, and see how the thing is done.

In general, the chips are made like those from Irish potatoes, but the frying temperature must be lower--that's the important point. When fried at the temperature commonly used for Irish potatoes, the sugars in sweetpotatoes burn or "caramelize" so that the chips are worthless as food though fairly satisfactory for building cinder tracks for athletic fields. Sweetpotato chips vary in color according to the variety used, and may also be made more or less brown by longer frying. Chips should be small, as larger ones tend to curl too much. They lose their crispness in damp weather but have the interesting property of regaining it as the air about them again becomes dry!

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"The period has been characterized by unusually and unseasonably high temperatures, accompaned by considerable rainfall," he writes from the Cranberry and Blueberry Disease Laboratory for the January 1-15 period.

"The warm days have made it possible to continue blueberry pruning in comfort. The high temperature does not appear to have had any serious results in the starting of buds and sap, possibly because there has not, as yet, been enough winter weather to enable the plants to break dormancy.

"We have spent a large part of the period in blueberry fields, making measurements and observations and collections.

"The Tenth Annual Meeting of the Blueberry Cooperative Association was attended on the 8th. The steady growth of the Association during its first decade was outlined. It now handles most of the cultivated blueberries in New Jersey and North Carolina. The crop sold cooperatively last year exceeded 20,000 bushels and was sold for nearly one quarter of a million dollars.

"Dr. F. V. Coville was honored for the part he had taken in founding the industry, and a gift from the society was accepted for him by his son, Stanley Coville. There was much disappointment that Dr. Coville was not able to be present but a few notes which had been dictated by him, after the beginning of his illness, were read.

"It was a great shock to all who had known Dr. Coville to learn of his death on the morning following the meeting."

George F. Waldo, Corvallis, Oreg.

"A large number of red raspberries have been found that are excellent for canning purposes and appear as fine or better than the Cuthbert, the principal variety grown for this purpose. Of the blackberries, No. 73 was equal, if not superior, to the Boysen in quality, appearance, and every other respect except for size. No. 73 is a Logan x Austin Thornless cross.

"During the week temperatures have been unusually low," he writes further, for the January 4-9 period, "going down to as low as 8° F. on January 7, and to 9° F. on January 8, just before sunrise in the strawberry fields. About two inches of snow fell Saturday with some moderation in temperature."

DECIDUOUS FRUIT INVESTIGATIONS

Lee M. Hutchins, Fort Valley, Ga.

Writing from the U. S. Horticultural Field Laboratory on January 7, he says: "The most interesting report that we have for you this week is the accumulation of hours of cold at 45° F. or below for the period covering October-November-December.

"The accumulation to January 1, 1937, is approximately 375 hours. This means that considerable cold will be necessary during January and February if all peach varieties are to come promptly into bloom with the arrival of warm spring temperatures. Although this figure is 308 hours less than it was on January 1, 1936, it is 84 hours greater than the corresponding figure (291 hours) for October-November-December, 1931, immediately preceding the prolonged dormancy behavior in the spring of 1932.

"Also, this year we have an accumulation of 21 hours more than we did for the corresponding period in 1934, during which latter year the accumulation of cold during January and February was sufficient to bring peaches into bloom on time. Growers are considerably alarmed, however, and we are receiving numerous telephone calls concerning the prospects at the present time."

C. P. Harley, Wenatchee, Wash.

"We are now experiencing our first real low temperatures of the season," he writes January 7th.

"The past two nights have caused the mercury to drop a few degrees below zero, with a minimum of 9° in certain localities. We are wondering how long these sub-zero temperatures will continue and what effect they will have on the trees. We have not had enough precipitation prior to the light covering of snow now on the ground, to settle the dust since early in June.

"The soil in many orchards in the Wenatchee Valley is quite dry below the surface. A slight precipitation, occurring about two weeks ago, penetrated the soil in this district about four inches. In general, I would say that half of the trees in the Wenatchee Valley proper are with insufficient soil moisture to withstand a prolonged period of zero weather.

"The conditions in the Okanogan and Chelan districts are even more acute. There is practically no snow on the ground in these areas and the soil for the most part is dry. Orchards fortunate enough to have applied a late irrigation will, I think, survive without difficulty. However, there is a general concern over the shallow, thin soils of the Okanogan District."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"The weather continued mild throughout the period with several fairly heavy rains," he writes from the Cranberry and Blueberry Laboratory for the December 16-31 period.

"The sanding of commercial cranberry bogs is not finished, and blueberry pruning is well under way on the large plantations. Where the area to be pruned is small, however, most growers do not start pruning until late in the winter.

"We continued the sorting of cranberries stored in the laboratory and visited the cranberry seedling plantation and two commercial blueberry fields."

John C. Dunegan, Fayetteville, Ark.

"The winter meeting of the Arkansas Horticultural Society was held at Springdale, Ark. on January 7th," he writes, "and due to the drought the program was confined to a discussion of peaches and various truck crops. This is the first time for 15 years, according to newspaper reports, that apples have not been the main topic of discussion."

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS.

J. M. Lutz, Meridian, Miss.

"Cooking (baking) tests were made of sweetpotatoes subjected to various storage conditions," he reports from the U. S. Horticultural Field Station January 9th. "Differences were in most cases not marked. Six days exposure to 30 percent CO_2 resulted in some injury to flavor and texture but a 1-day treatment did not. Potatoes held continuously under outdoor temperature conditions showed some frost injury in some cases. Sweetpotatoes cured for 2 to 6 days and then stored under outdoor temperature conditions were generally equal in quality to those which were fully cured and then held at 50° to 55° F. in the sweetpotato house."

APPLE UTILIZATION STUDIES?

The Blue Anchor recently contained an item that may possibly open the way for a new use for apples. It is an application of the old proverb that an apple a day keeps the doctor away. In this case a doctor and banker were courting the same girl. The banker called one day to say that he was going to be out of town for the next ten days and that he was sending the girl a gift the next morning. When she opened the packages eagerly the following morning she found--10 apples!

WHAT WILL THE CURLY-TOP SCORE BE THIS YEAR?

"We have lately been served with scores from various kinds of bowls," writes Dr. B. F. Dana from Corvallis, Oreg. "At this season we are also interested in the probable curly-top score for the coming summer. The past season was the third in a series of three years in which curly top has been especially serious on vegetables.

"The 1933-34 and 1934-35 winters were comparatively mild. Curly top developed to epiphytotic degree during the seasons following these mild winters. I must explain that winter conditions are important to a pathologist working on curly top since the beet leafhopper, vector for the curly top disease, is influenced by winter conditions. During a relatively mild winter, winter annuals prosper and leafhoppers have an abundance of food upon which to over-winter and produce large spring populations. The abundance of the spring population influences the degree and extent to which curly top may be expected to appear in cultivated crops.

"During the 1935-36 winter, conditions for the leafhopper were not so favorable as during the preceding two winters. During the latter part of October, severe freezes destroyed winter annuals. Another period of severe cold weather occurred during the last week in March, 1936.

"We confidently expected this unfavorable weather to reduce leafhopper populations. We expected a parallel reduction in curly top. During the 1936 season, however, the spring conditions were favorable for development of mustard and annual plants upon which the leafhopper feeds in its desert breeding grounds. Many of the desert areas were green with mustard until well into the early summer. This permitted a large spring population of hoppers to develop.

"The dispersal of the curly-top vector from native breeding areas was later than usual, permitting some of the crops to escape infection and distant dispersal of the leafhoppers seemed not to be as great as in 1934 and 1935. However, a very respectable epiphytotic of curly top developed in tomatoes and other susceptible vegetables throughout the irrigated sections of the Pacific Northwest.

"The curly top score for 1937? We prefer to wait until the 'game is played.'"

This curly-top disease, widely distributed and well known on sugar beets, has been found to attack a large number of vegetable crops as well as many wild plants, weeds, and ornamentals. It is caused by a virus that is spread by the beet leafhopper. This insect acts as a carrier of the disease from plant to plant and when it migrates from one place to another it distributes the disease to susceptible plants upon which it feeds. Studies of the insect show that it can easily migrate 50 to 150 miles.

U. S. HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"Sub-zero weather gripped the station from about midnight Thursday, January 6th to noon on Friday, January 8th, with minus 23 being the lowest recorded--the morning of the 8th," writes A. C. Hildreth.

"Since the station was established this is the longest sustained sub-zero weather since 1933. In February, 1933, there was a 77-hour period of below zero weather--February 7 to 11--during which the lowest temperature recorded was 27 below on February 9th, at night.

"No discomfort was experienced because of the present cold snap, although outdoor work was necessarily suspended for a few days."

NUT INVESTIGATIONS

Alton H. Finch, Tucson, Ariz.

"The pecan deal at Yuma has ended for this year," he writes for the week ending January 2.

"The growers report that Success and Burkett nuts sold at 30 cents a pound wholesale. Halbert brought 16 cents. Onliwon, Kincaid, Millican, Western, and similar varieties brought from 20 to 25 cents. Mahan, total production of which was only somewhat over a ton, sold for 50 cents a pound.

"There is no carry-over of this year's crop."

C. L. Smith, Austin, Tex.

"The use of indole-butyric acid is proving to be very effective in rooting pecan root cuttings and to a somewhat lesser degree is effective on stem cuttings. It is believed that a method can be worked out whereby the stem cuttings can be rooted successfully."

Milo N. Wood, Sacramento, Calif.

"We had a number of callers during the week seeking information in regard to the planting of almonds," he writes January 2. "There seems to be quite an interest in extending almond plantings in California."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"I have been accused of writing quite a lot about the weather in my weekly reports and no doubt with reason," he comments in his letter of January 16th. "In spite of that, it is a recorded fact that we are having some unusual weather at the present time which will bear description.

"As with many sections of the country, our days have been much above normal in temperature, so mush so that many spring flowering plants are in full bloom and many other plants are beginning to grow. All the spring flowering bulbs are blooming as are also Japanese magnolia, plum, spiria, and Japanese quince, and pears, and I have seen a few peach blooms. Such plants as fig, crepe myrtle, roses, and bermuda grass are beginning to make some growth.

"Fortunately, pecans have not yet shown any evidence of growth although the wood is about as full of sap and gums up the pruning saws about as badly as it usually does just before growth starts. I have also seen press reports of peach growers in north Georgia burying ice around the peach trees in an effort to retard their reactions to the warm temperatures.

"In so far as we benefit by not having to build fires in the house for warmth we are enjoying the present situation, but thoughts of the prospects of a sudden cold snap are somewhat unsettling. It is doubtful if we have much fruit in the southeast this year and unless we are fortunate we will see a lot of delayed dormancy and foliation, or on the other hand severe freezing injury, on pecans. The high temperatures and sparse rainfall may result in increased injury throughout the whole coming growing season in the event rainfall continues to be below normal. During the past week we had about .25 inches rainfall and temperatures in the sun which went as high as 90° F."

Paul W. Miller, Corvallis, Oreg.

"Unseasonably cold weather prevailed during most of the past week," he writes from the U. S. Fruit Disease Field Laboratory on January 9th.

"On January 7 the temperature dropped to a minimum of 8° F. at Corvallis, Oreg. The abnormally cold temperature has caused appreciable damage to fall sown grains in western Oregon, but fruit and nut trees were apparently not injured to any significant extent, if at all, as they are fully dormant."

NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"In the greenhouse boron deficiency is showing up on certain soils," he writes January 16th.

"This is with the top foot and not in any of the subsoils. Where we have boron on turnips, powdery mildew is not developing. Where boron is not present or is present in insufficient quantities this trouble is developing to quite an extent. The same thing occurred last summer with sunflowers. Where boron was applied the plants would be practically free of mildew, while others right beside them with interlocking leaves would be almost covered with mildew.

"We have had a report from Dr. Frank Eaton of Riverside, Calif. on boron content of walnut leaves in this section. His report shows practically no boron, in some cases being as low as 24 p.p.m. In the southern part of the State where he made other collections and reported that the trees looked better than anything he saw here, he found 200 p.p.m. Following this, and our studies, we will make injections directly into the trees a little later according to methods reported by other investigators.

"We have attempted in our cover crop studies to grow turnips, mustard and crimson clover in our hill soils with no success at all. On the soils reported by the Soils Department as being deficient in phosphorus, we have applied superphosphate with no results.

"In the greenhouse we are getting an explanation for this same behavior. Phosphorus, potash, nitrogen, and sulphur applied alone do not work well. Nitrogen gives somewhat of a stimulation. Phosphorus, sulphur and potash do not stimulate at all: When nitrogen, phosphorus, and sulphur are combined we have the best results. Potash applied alone or in combination has a depressing effect in all cases. In some cases lime had had a depressing effect on plant growth....

"The weather has been cold quite a bit of the time, and for a few days we had snow on the ground. It may be possible that we will find sunburn damage on the southwest side of the trees, as it warmed up considerably during the daytime and at night the temperature dropped down to 8 to 10° F.

"This has held the development of filberts almost stationary. Even the early blooming varieties in the college collection had barely started shedding pollen, and cases have been known where pollen had been shedding a month earlier than this. The regular varieties of pollenizers are almost dormant yet."

DOES SUPPLEMENTAL IRRIGATION PAY?

"Is it profitable?" is the first question raised in the humid East where supplemental irrigation is being adopted rapidly by truck and orchard farms, says F. E. Staebner of the Bureau of Agricultural Engineering, as reported in a late press release.

"Not all farmers keep accurate cost figures," he says, "but those who have arranged to water their crops when rainfall is insufficient report that it is inexpensive drought insurance. Increased yields more than pay the costs.

Mr. Staebner cites increased returns from farms where supplemental irrigations has been used for several years. A Virginia orchardist sets his average increase as "several carloads" and the average cost as "one carload." An apple grower in the same State finds the average yearly cost of water about 35 cents a bushel, a sum more than balanced by increased yield and better quality. A Michigan potato grower reports irrigation has increased returns an average of 100 bushels an acre. A New Jersey farmer put increased spinach yield at "about 233 crates per acre each year," while a doubled yield of peppers is reported by another New Jersey grower. Increased revenue from a pear orchard in Michigan is put at more than a dollar a tree. An Ohio orchardist reports irrigation "doubled the quality" of his pear crop. Other reports from Michigan show a strawberry increase of 200 16-quart crates to the acre; large and better quality. Peaches "more than $100 an acre. One grower reports a gross return of $760 from one acre of strawberries.

ADMINISTRATIVE NOTES

Automobile Inspection — The Business Office has recently sent to each of our stations a copy of Bureau of Plant Industry Memorandum No. 920, with interpretations by the Solicitor, concerning the inspection of motor vehicles. Our Department Regulations appear to be broader and stronger than those of most of the States, and definitely place the burden of determining the safety of the vehicles on the employe in charge.

We believe our employees can be trusted to seek the advice of dependable mechanics in connection with such inspections as may be needed. Usually the State laws requiring inspection of automobiles fix a nominal fee for the service and if our employees feel that the State inspector is the proper person to handle the job, the simplest procedure in complying with both Department and State regulations would probably be to have the State inspection service do the job. However, with BPI 920 and the Solicitor's interpretations at hand, each employee will be able to decide for himself the best procedure to follow in his particular case.

ADMINISTRATIVE NOTES

Contacting Employees. February 19, 1934, the Director of the Budget issued instructions reading as follows: "The President has requested me to inform you that it is his desire that no contacts or negotiations be made by officers or representatives of one department or agency with employees of another department or agency with a view to securing the services of such employees before approval is given to such contacts and negotiations by the heads of the organizations concerned."

The Department has recently been advised by the National Emergency Council that a number of agencies have reported to it that this Budget order is being ignored in some quarters. It is again strongly emphasized that the President's wishes in this matter must be followed, and any of our employees who may be responsible for the selection of personnel for appointment are cautioned to comply absolutely with the Budget order quoted.

Why Men Go Wrong February 19, 1924, is a fairly long time ago, as the crow flies, and on that date, Mr. H. E. Allanson told a group of the Bureau's field workers: "It is my experience that more delay is caused by failure to give complete information when transmitting an account or recommendation than for any other single cause. We find it important with respect to all matters of Department business to have each thing self-explanatory when it goes through. A transaction which may appear to be erroneous, irregular or illegal often may be satisfactorily explained later, but the explanation always lags behind the criticism, never receives the same distribution, and never corrects the harm that has been done."

In December 1936 Secretary Wallace received a letter from one of the senior attorneys of the Office of the Comptroller General who attended a meeting of some of our field workers in order to get their viewpoint on administrative and accounting matters, and to explain to them something on the workings of the Comptroller's office. He reports an excellent spirit of cooperation among Department employees, and a real desire to comply in detail with the laws and regulations.

He adds: "I feel, also, that in a good many instances the administrative action is questioned because of failure to give in detail the facts and circumstances pertaining to the matter, and in this respect it was urged upon the representatives to give a full and complete statement of the transaction supported by the papers of record. If this is done in the first instance it often makes unnecessary a further request upon the administrative department."

It is a good plan to credit the other fellow with relatively as much intelligence as you have, but often a serious error to imagine that he knows as much about your work and the conditions you encounter as you do. It is better to make each voucher, in particular, self-explanatory.

THE COMPLETE LETTER WRITER

A man was showing his friend around his ultra-modern home. "There are a lot of points about the house that I like very much," admitted the friend; "and there are some things that are completely over my head--and I don't mean the ceilings. What is the idea, for instance, of having the round hole in the front door there?" The owner of the new home smiled indulgently. "Oh," he said, "that's for circular letters."

The reason, of course, why there are no round holes in the front doors of the Department is that we do not go in very much for circular letters. We believe that our correspondents deserve first-hand, and first-class treatment. Personally dictated letters are the rule where inquiries cannot be answered to better advantage by mailing bulletin.

The very thought and care we give to our correspondence may be a source of criticism, however. Mr. Paul H. Appleby, assistant to the Secretary, points out in a recent memorandum to bureau chiefs and heads of offices that there has been an increase in the number of letters received from persons who are somewhat irritated over their failure to receive prompt replies to their inquiries.

Naturally, every letter received should be answered--and answered as promptly as possible. What some correspondents overlook is the need for acknowledging letters promptly where there is going to be some delay in assembling the information asked for. Make it a rule, then, where the preparation of an adequate reply is going to take considerable time, to mail at once to your inquirer a brief acknowledgement with a promise of a more detailed reply later on.

With the assembling of Congress, the newspapers reported the advice given by Senator Bankhead to a group of new Congressmen. If they wanted to keep their jobs, he told them, they should answer letters from constituents the day they received them. "Reply first," he urged, "to those letters written in pencil on tablet paper. They come from somebody at the head of the creek who'll be your friend for life."

This type of advice should be taken very much to heart by all our employees who have occasion to write official letters. We are the paid servants of the American people and they deserve whatever service we may be able to render. And that pencil-written letter, on tablet paper, from some man or boy on a tiny farm, is vitally important to him. The answer he receives and the promptness with which he receives it, is apt to decide whether the Department has won a friend or made an enemy. From this single letter, the boy may form a life-long opinion as to the usefulness--or otherwise--of the Department.

Answer those letters carefully. Answer them promptly. And if there is going to be some delay in securing the information requested, get off a brief acknowledgement and promise at once.

Vol. 9 No. 3 February 1, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

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Vol. IX Washington, D. C., February 15, 1937 No. 4

Holidays There is nothing in law permitting the Secretary or any subordinate official of the Department to authorize the closing of a Government office or the excusing of Government employees from duty on local holidays. The annual leave regulations provide only for Sundays, legal holidays and holidays declared by executive order. This language, the Solicitor holds, covers national holidays but does not include local holidays unless otherwise declared by executive order.

It follows that if an employee is excused from duty on a local holiday, the absence must be deducted from his annual leave. The one exception to this rule heretofore recognized by the Solicitor's Office in keeping with the opinions of the Court of Claims and the decisions of the Comptroller General is that in cases where an employee reports for duty, or is in position to report for duty and the Government is not in a position to utilize his services, the employee is entitled to compensation for such duties and his enforced absence is not deductible from his annual leave. That is to say, if the buildings in which the departmental employees in the State or Territory are stationed are closed on local holidays, or for some similar other reason employees who work in the open find it impossible to perform their usual services, they may be excused from duty without deductions being made from their annual leave.

Furthermore, since it is not within the authority of any supervising employee to create or make possible a non-work day which falls outside the provisions of the annual leave regulations, it is not permissible to excuse employees on such local holidays with the understanding that they will make up the time by working after hours on other days.

VEGETABLE INVESTIGATIONS

H. L. Blood, Logan, Utah.

In connection with the trial of a certain case in court (and it is the editor and not Dr. Blood speaking just now!) the judge took occasion to impress upon the witness the necessity for sticking to the facts. "We do not want running comments that have no particular bearing on the case," he said. "What we need is evidence no one will dare dispute." The witness nodded his approval. "That's what I'm giving you, your Honor," he insisted. "It was my mother-in-law who told me this."

Now we will let Dr. Blood offer his testimony. Writing from Utah after his return from a brief visit to Washington, Beltsville and points East, he says: "The myth about my presence influencing the weather has been effectively exploded. Since I returned Utah has suffered its coldest weather of the season. The night of January 20 the thermometer dropped to 36° below zero at the Sugar Factory station just southwest of Logan. This is the coldest temperature Logan has suffered since 1925, and it is still cold. Considerable damage has been done already to the peach, apricot, and sweet cherry trees throughout northern Utah."

It does begin to look as though Dr. Doolittle will have to submit an apology--or risk suit for defamation of character.

"The most severe winter for sometime is being experienced in the southern part of the states of Utah and Nevada. The same area over which Eutettix breeds in large numbers is involved. Just what the effect of such a winter will be on the population of the sugar beet leaf hopper around our Hurricane trial grounds can not be definitely determined at this time. If the temperatures are low enough, with the amount of moisture that has fallen, we could experience a very marked scarcity of insects on the trial grounds this coming season.

"We have just completed this year's chemical test on the fermented tomato juices and find that they coincide very closely with out findings of one year ago. I thought these tests should be run again this year in an effort to clarify the fermentation picture as soon as possible. We decided to enlarge the tests a little to include the quantitative tests for alcohol and we found that there is as much as 4 percent alcohol developed at certain stages in the fermentation process. This is rather interesting and may account in a measure for the detrimental effect of the fermentation procedure on the germination of the seed.

"Our germination tests on the fermented and acid treated seed indicate that temperature of treatment very markedly affects the influence of the treatment upon the viability of the seed."

T-BUD MAKES NEW GRAPES BEAR FRUIT IN 18 MONTHS

Under this heading the Press Service sent out on February 7 an excellent summary of work being carried on at the Fresno vineyard by Elmer Snyder and Frank N. Harmon.

"A method whereby seedling grapes of California varieties may be brought into bearing in 18 months, although usually it takes 4 to 5 years, has been developed by scientists of the United States Department of Agriculture as a means of speeding up experimental breeding work with this fruit," it says--and the man who prepared the release certainly knew how to put a punch in his opening paragraph.

"At the Fresno, Calif. experiment station, Elmer Snyder and F. N. Harmon, of the Bureau of Plant Industry, have used the simple 'T' bud as a means of hastening fruit bearing of promising new varieties.

"The seeds are planted about the first of February in a greenhouse flat. A few weeks later, when the plant has come up and started a few leaves, it is transferred to an individual gallon can or a 6- to 8-inch greenhouse pot. By the latter part of May or first part of June the seedling attains a growth of 12 to 16 inches from which three to four buds can be obtained.

"These are 'T' budded into vigorous rootstocks or bearing vines which have been growing in the vineyard. They are wrapped securely with rubber grafting tape and the cane is pinched off at the tip to check terminal growth. A week to 10 days later the shoot is cut back to the bud, leaving some of the original leaves as shade. As three or four buds are inserted in each shoot the weaker ones are pinched back and only the strongest allowed to grow. These shoots under the conditions at Fresno will bear fruit in August of the second year, about 18 months after the original seeds were planted.

"During the past year Snyder and Harmon made over 1,500 'T' buds and about 80 percent grew successfully. The buds must be shaded during the extremely warm weather of the first summer. It is also important to cut the shoots back at the proper time and constant upright training was found to promote more rapid growth.

"A quick fruit reading of new varieties can be made in this way, although final commercial merits of a promising seedling cannot be obtained this early. Many qualities, such as color, shape, size and flavor, can be determined at this time, thereby speeding the experimental work."

DECIDUOUS FRUIT INVESTIGATIONS

W. W. Aldrich, Medford, Oreg.

"Some study was given to the taking of samples of clay adobe soil while in a 'wet' condition," he writes from the U. S. Pear Field Station on January 25th.

"With the standard point on a King tube, the soil core obtained after driving the tube to a depth of 12" was only 4 inches long. With an opportunity to go over this difficulty with Mr. M. R. Lewis I learned that as wet clay soil enters the tube the friction increases until the resistance is sufficient to cause the soil-filled point to push through the soil without more soil entering the tube. This difficulty had to be solved before more soil samples could be taken for determination of soil gas analysis and root growth per unit of soil volume. Following Mr. Lewis' suggestion, we found that by lubricating the inner wall of the celluloid tubing with a light oil, driving the soil tube only 6 inches would give us 6 inches of soil inside the celluloid tubing...."

He had written January 18th: "Upon arrival in Medford on January 18, I found the Rogue River Valley still enveloped in a period of 'rough' weather, which had begun with a snow on January 5, and had continued with cold weather. Minima of 1° and -4° occurred at the Medford Experiment Station on January 7 and 8, respectively. For several nights thereafter nightly minima were between 11 and 15°. The snow remained, providing soil cover which seemed responsible for keeping soil temperature at 6-inch depth constant at 27°. Thus I expect no crown or root injury to trees as a result of zero weather. Some darkening of pith below fruit-buds is now apparent, but this injury does not seem to be as great as the similar injury which occurred following the near-zero weather on December 8 and 9 in 1932....

"The Oregon-Washington Pear Bureau reported on January 19 that in 1936 the total packout of late pears in Washington and Oregon was 773,639 boxes of Bosc, 1,314,386 boxes of Anjou, 542,678 boxes of Winter Nelis and 136,753 boxes of Comice. From other available reports it would seem that in Oregon Bartlett production was 1.7 times Anjou production and 2.4 times Bosc production. In Washington Bartlett production was about 14 times Anjou production (Bosc production in Washington being negligible).

"The Portland office of the Bureau of Agricultural Economics reports that the total production of all pear varieties in Oregon and Washington was about 9,160,000 bushels (approximately boxes), with a total value of $5,954,000.00 in 1936."

DECIDUOUS FRUIT INVESTIGATIONS

J. H. Weinberger, Fort Valley, Ga.

"The pits from the peach crosses made in 1936 at the U. S. Horticultural Field Station, Beltsville, Md., and kept to date in cold storage at the U.S.Arlington Experiment Farm, Rossyln, Va., arrived in Fort Valley on January 19th," he writes from the U. S. Horticultural Field Laboratory on January 25th.

"They were immediately cracked, the integuments were removed, and the embryos were placed in sand in flats, approximately 1800 of them. All but a few Chili seeds were in excellent condition. Many Halehaven and Gold Drop seeds had cracked the endocarp and commenced growth.

"The seeds cultured on sterile agar immediately after ripening appeared to be in excellent condition. Only 10 of the approximately 1,000 jars were contaminated. After 12 days in the warmth, many of the tops are touching the lids of the jars and will have to be transplanted shortly.

"On January 20th, John Rue and I drove down to Montezuma to investigate the icing of the peach trees which had received so much publicity. (Dr. Hutchins brought back a photograph of the process taken from a Los Angeles paper.) The method was to partially bury two 25-pound cakes of ice on opposite sides of the tree. We did not see the owner, Mr. McKenzie, but the foreman who told us about it was rather skeptical of the procedure. The ice lasted about 24 hours. The variety was Early Rose, which showed no signs of breaking dormancy in any event, so that no effects of the treatment were evident.

"A few open blooms can be seen on Mr. Baird's Early Hiley trees and most of the buds are pushing quite rapidly, especially on younger trees. John Rue reports an accumulation of about 440 hours of temperature below 45°F. to date. Hiley, Uneeda and Elberta show signs of breaking dormancy. As Dr. Hutchins remarked, these have had the minimum amount of cold to begin development but not enough for normal growth. Kieffer pear trees are in full bloom. In all probability the blooming period this year in central and Southern Georgia will be very much drawn out."

John C. Dunegan, Fayetteville, Ark.

Writing for the week ending January 16th, he says: "Mr. J. B. Danield, extension specialist in farm management, told a group of county agents meeting at the University this week that the strawberry acreage could be increased 50 percent in the State this year....It is estimated that 15,000 acres of strawberry plants were destroyed by the dry weather."

DECIDUOUS FRUIT INVESTIGATIONS

Leslie Pierce, Vincennes, Ind.

"The moderate temperatures the latter part of December and the first two weeks in January have caused considerable advancement in the development of peach blossom buds," he writes January 19th from the Fruit Disease Laboratory.

"At the stage of advancement shown when buds were examined January 15, it is very likely that a temperature of zero would cause serious damage to the 1937 peach crop....

"Some striking examples of the difference in resistance to frost damage between varieties of peach are plainly evident in our experimental orchard. All of the mature trees of the Hale and South Haven varieities were killed by the 1936 freeze. The South Haven and four rows of the Hale trees were in the highest part of the orchard. At the same elevation not more than 10 percent of the Elberta trees were killed.

"Wilma showed slightly less and Early Elberta, Belle of Georgia and Champion very much less resistance to frost damage than Elberta. The Salberta and Brackett varieties came through the freeze showing little if any damage."

C. F. Kinman, Sacramento, Calif.

"Among the results of pollinating Bartlett pears last spring in connection with some experiments to determine the cause of premature fruit shedding are a few items that may interest you," he writes to Dr. Cullinan on January 6th.

"All fruit from pollinated blossoms bore seed and all fruits on check branches were seedless.

"At harvest there were 10 leaves per fruit on the pollinated branches and 20 leaves per fruit on check branches. The volume of fruit per given area of leaf was about 2-1/2 times as much on pollinated as on check branches, although all check branches had a good crop of fruit.

"Over twice as many fruit buds for 1937 developed per given leaf area on the check branches as on the pollinated ones.

"Combining the number of fruits produced and the number of leaf buds formed per given leaf area indicates that leaves on pollinated branches were more productive than on check branches. Fruit from pollinated blossoms was heavier and broader in relation to length than on check branches."

NUT INVESTIGATIONS

J. R. Cole, Albany, Ga.

"The spring weather continues here, with no change in temperature since the last report," he writes from the U. S. Pecan Disease Laboratory on January 23d. "It is interesting to observe Kudzu plants growing rapidly, china trees foliating, etc. Native grasses have made enough growth for cattle to graze in the pastures here. It is hard to believe that ice and snow cover much of the country, while we are having such nice weather."

He had written January 16th: "Continuing a study of the data collected from our spray plots, it seems that almost regardless of the price obtained for pecans this season our bordeaux sprayed plots will pay dividends. That is especially true of the 3-1-50 bordeaux mixture.

"In the Waugh orchard, near Albany, the plot sprayed with one prepollination application of 2-1/2-50, followed by three applications of 3-1-50 bordeaux mixture averaged 59 pounds per tree. The check trees averaged 17 pounds. The plot sprayed with 1-50 bordeaux mixture and 1 quart of summer oil emulsion averaged 30 pounds per tree. This plot was adjacent to the 3-1-50 bordeaux plot. Figuring the price of the nuts at 15 cents for the sprayed and 10 for checks, the net profit for the 3-1-50 bordeaux over the checks would be $7.15 per tree.

"The nuts from sprayed trees, tree run, sold for 15 cents per pound, while those from the unsprayed trees brought even less than 10 cents a pound in most cases, though I have tried to be conservative and use the maximum price of 10 cents in my estimates. These nuts, checks, were sold only for cracking purposes and were of very poor quality. They averaged 95 per pound as compared with 60 per pound from the sprayed trees."

C. L. Smith, Austin, Tex.

"We are finding that the root-inducing substance is giving excellent response on pecan shoot cuttings, especially when applied in water solution," he writes January 16.

He had previously written for the January 4-9 period: "During this week winter apparently made its appearance in this section. The temperature went to 17°F. at Brownwood and to 33°F. at Austin. A misty rain which froze as it fell has caused a great deal of damage to trees. The load of ice broke many limbs, and seems to have been more destructive on the pecan than on other trees. In many trees with weak crotches the trunks were split and the trees ruined. There was also a tremendous damage to telephone and telegraph lines."

NUT INVESTIGATIONS

F. N. Dodge, Robson, La.

"Time has been spent the past week in working on the 1936 yield and cross-sectional area data of the Cultural Experiment located at this station", he writes from the U. S. Pecan Field Station on February 1.

"No differences in these data are sufficiently significant to draw any conclusions; however, there are differences of 10 percent in favor of the cultivated plots over the sod and summer legume plots in increase in the cross sectional area of tree trunks. Yield differences are too small to have any significance.

"The weather has been so moderate that the grass, weeds, and clover in the lawn got high enough to make it necessary to mow this week; which has been done. This week has given a five-day break in the rainy spell, and has enabled us to get on the ground and plant the seed for our nursery.

"Cover crops are doing excellently; with rye a foot high in places."

Milo N. Wood, Sacramento, Calif.

"The almond breeding work has required rather intensive and close attention," he writes January 16th.

"The evaluation of the nuts show that we have quite a number that have numerous outstanding points of merit, and it is probable that these will be of value in making future crosses if not immediately to the trade. Further trials may show that some of these nuts are of value commercially."

Alton F. Finch, Tuscon, Ariz.

"Arizona and the Southwest are experiencing a very cold winter," he writes under date of January 23d.

"A minimum of 24°F. in the Yuma valley occurred on January 22. There will probably be some injury to young pecan trees and the character of blossoming in older trees next spring will be noted with interest."

THE HOUMA POTATO: A NEW VARIETY

There is one English word that is almost always pronounced incorrectly; and another the pronunciation of which is always disputable. The two words, of course, are "incorrectly" and "disputable." There is also some little argument about the correct pronunciation of the name of one of our very promising new potato varieties--the Houma. However, down in Louisiana, where the Houma has made a truly astonishing showing, they pronounce it excellent.

It has been under observation and test for 5 years in Louisiana, says Circular No. 420, "The Houma Potato: A New Variety," by C. F. Clark and F. J. Stevenson of our Division; and J. C. Miller, horticulturist, Louisiana Agricultural Experiment Station. It was sent to that State as a single tuber in the fall of 1930 and grown there in the spring of 1931. As a result of its showing during these 5 years, the Houma is now considered an outstanding variety for that State--and particularly for the Houma potato growing section--hence its name. In three tests, two at Baton Rouge and one at Houma, it yielded an average of 277 bushels to the acre. In the same tests Chippewa yielded 273, Katahdin 256, and Triumph 253 bushels per acre.

" In addition to high yield it has a number of other characteristics which make it especially desirable for Louisiana," the circular points out. "It has high cooking quality and it makes a good crop planted either in the spring or in the fall. The seed stock holds over well in storage from one spring to another, resulting in good stands. The tubers set comparatively deep in the ground and, as a result, sunburned potatoes are rarely found. It sets a large number of tubers which develop into medium sized potatoes under favorable conditions.

"The plants are upright in habit of growth, with dark-green foliage, and produce relatively smooth tubers which would be classed commercially as round, a shape favored by growers in the South."

The Houma is a cross between the Katahdin, one of our highly successful potato hybrids, and the Charles Downing, the Katahdin being the pollen parent. Although the Houma is not immune to mild mosaic, it appears to be highly resistant to this disease under field conditions. Too, no symptoms of potato wart have appeared on this variety when grown in wart-infested soil.

At Presque Isle, Me. the average yield of primes for the 4-year period 1932 to 1935 was 350 bushels per acre, and of totals, which included primes and culls, 414 bushels. The Houma significantly outyielded both the Irish Cobbler and Katahdin in these tests. It appears to be well adapted to Maine, North Carolina, and particularly, as stated, to Louisiana, but it is too soon as yet to make predictions as to its value for other potato-growing regions.

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASES INVESTIGATIONS.

C. O. Bratley, New York, N. Y.

Writing from the U. S. Market Pathology Laboratory on February 5, he says: "Last winter about 50 percent of the Bosc pears received in New York City from Oregon were ripened at the auction piers before they were sold. The railroads maintained this service by fitting ripening rooms on lighters at pier-side.

"This fall similar service was made available by the railroads in Chicago and Boston. At New York the facilities this season include four ripening room in one of the storage houses in Jersey City. Often as many as 20 cars of Bosc pears were in the ripening rooms at one time. About 75 percent of the pears of this variety received from California, Oregon and Washington this season were so conditioned prior to sale.

"The ripening rooms are held between 60° and 70°F., and at a high humidity, obtained by the release of steam and the covering of the floor with water. An average of four days under these conditions were required to ripen Bosc satisfactorily. The charge made by the railroad for conditioning the pears was 3 cents per box, unless more than four days were required. The receivers estimate that the conditioned fruit has been drawing a premium of at least 5 cents a box.

"The last car of Bosc pears for the season was sold early in February. This variety usually fails to ripen with good quality after December; instead the fruit does not soften properly and often is affected with internal breakdown. Few of the Bosc sold during January and February were conditioned because the fruit did not soften satisfactorily, shriveling at the stem was excessive, and any decay in the boxes was caused to leak by the extra handling.

"One of the representatives of a large receiving firm in New York City has been employed full time by the Oregon-Washington Pear Bureau to encourage the conditioning of all fall and winter pears and to advise receivers on proper handling methods. As yet no Anjou pears have been conditioned; but pressure is being brought to bear on the receivers to condition an occasional car to obtain the reaction of the trade."

ADMINISTRATIVE NOTES

Telephone-- Toll Charges

There appears to be some confusion regarding the certifying of toll-call charge certificates. These should be submitted in duplicate, both copies signed by the employee in the space for signature directly below the certification paragraphs. The approval space at the bottom of the certificate is for the use of the Head of the Division. Nothing should be written in this space by the employee.

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS

Freeze in California

W. R. Barger has sent Mr. Fisher some interesting random notes on the freeze in southern California from January 9 to 25, 1937. "On coldest nights more than 700,000 bbls. of 27° gravity Diesel oil were burned in southern California, this being the estimate of the Fruit Growers' Supply Company," he writes. "The daily allowable crude oil production for the State at this time is 515,000 bbls. The oil companies estimated that the season to January 25 saw between 4 and 5 million barrels of oil go up in smoke. Some 4,000,000 citrus heaters were in operation, covering 80 percent of the non-frostless acreage.

"On the three coldest nights firing started around 4 p.m. and continued until 10 a.m., consuming a million dollars worth of oil each night. The smoke pall over southern California obscured the sun for three days (January 20-24) and day time temperature did not go above 32° in many areas. An oil shortage occurred January 23, due to lack of facilities for transporting oil from refineries. Minimum coldest areas, January 21-23: Southern California 16° to 21°F. several hours; Imperial, 15°, short duration; Nilands, several degrees above 18°, short duration; and Indio, 13-1/2° F., short duration.

"The California citrus crop was valued at $112,000,000 for 1936-37. Probably 50 percent of the crop was damaged--small loss in heated groves, perhaps 10 to 20 percent; total loss in unheated groves. Very little citrus tree damage in heated groves, and surprisingly little tree damage in unheated groves surrounded by heated groves. Total foliage killed and wood killed back to branches one inch in diameter in unheated groves with no heated neighboring groves.

"Avocados, except those fairly high up on hillsides, were killed back to the trunk, probably 80 percent of the California crop being frozen. No growers were prepared to heat their plantings. Fuerte trees and Mexican type trees proved most hardy. Avocado injury: Black pedicel, rubbery flesh, blackening of fibrovascular bundles in the fruit.

"Coachella Valley.--A 23° minimum of short duration Sunday morning, January 10, 1937, resulted in no damage to grapefruit. Tomato plants, some of them 1 foot high, were also saved by running water between rows of plants. All tomato rows run east and west and have slanting paper shelters along the north side.

"A 13-1/2° minimum of fairly short duration (25° midnight) January 21-22 froze outside grapefruit, 4 inches in diameter, solid, and curled leaves. Inside fruit had none to small amount of slush ice. Next night a minimum of 18° froze inside fruit near top of tree, but inside fruit near bottom of tree came through this and the following night (with minimum of 18° for short time) with none to small amount of slush ice.

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASES INVESTIGATIONS.

W. R. Barger Freeze in Southern California (continued)

"Frozen grapefruit has slightly watery pulp, soon feels softer than normal fruit, and may show slight skin spotting but no hesperidies crystals and will probably take a month for openings between segments to appear.

"Grapefruit trees suffered nearly total killing of foliage and twigs back to 1/2-inch diameter.

"About 30 percent of the crop, including nearly all outside fruit, was harvested before the freeze, (Coachella Valley grapefruit crop for 1935-36 equal to 341 cars.) From 20 to 40 percent of the fruit now on the trees may be marketable. The damage is much less under palms than in solid grapefruit plantings.

"Tomato plants killed except in small acreage where fires were burned around edges of 2- to 4-acre plantings. Smudge pots over 6 feet augmented with brush, tire and manure fires, 'fenced' these tomato patches. In spite of this heating the terminal buds were frozen.

"Carrot, spinach and turnips are now being harvested, but they all taste decidedly sweet."

"Date palms, being vase-shaped instead of teepee-shaped as is the case with grapefruit trees, apparently did not hold the ground and plant heat near the ground except in old gardens where fronds covered entire acreage. About one-half the fronds from bottom whorl upward are injured and sweet sap is leaking from midribs of these fronds. The pinnae are turning pale and drying, starting at tip of pinnae and progressing to midrib and down the midrib from the tip. The bud of the palm is most probably safe but spathe injury can not be estimated because they are still behind the fiber of the trunk.

Imperial Valley.--Grapefruit damage is comparable to that in the Coachella valley. Bearing tomato plants and beans were killed. A few ripe tomatoes are being taken from frozen plants. A few non-bearing tomato plants were saved by covering on north and south and running water between plant rows. The 1937 cantaloupe production was cut 50 percent because of early planted acreage being frozen.

Dr. H. J. Webber issued the following advice to the citrus growers: "Do not prune or whitewash for 3 or 4 months. Then cut back to healthy new growth. Irrigate, fertilize and cultivate as if nothing had happened, because the next crop will be much larger than normal." (I believe blossoms for "next" crop will be 1937 where terminal branches are not frozen, but 1938 in Coachella valley where so much terminal wood seems to be killed.)

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASES INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Mr. Ryall and the writer attended the conference of the Northwest Cooperative Spray Project in Walla Walla, January 18 and 19, reporting upon removal of phenothiazine and non-lead arsenical spray residues as worked with in 1936," he writes on January 23d.

"This project has been enlarged from the original 'oil spray' project to include all sprays. This brings plant pathologists more prominently in this group which now is of outstanding importance as a working example of coordinated experimental effort among Federal, State, Dominion and Provincial research workers in Idaho, Montana, Oregon, Washington and British Columbia. They are following the original plan of outlining definite problems and materials to be worked with at the beginning of each season and, after experiments have been conducted under different climatic conditions of the Pacific Northwest, of exchanging data at the conclusion of each season for purposes of comparison and independent deductions."

METHODS IN PLANT PHYSIOLOGY

A notable new book is "Methods in Plant Physiology: A Laboratory Manual and Research Handbook," by Walter E. Loomis, associate professor of plant physiology, Iowa State College, and Charles A. Shull, professor of plant physiology, University of Chicago (McGraw-Hill Book Company, 1937, pp. 472).

The attempt has been made to bring together material useful to students in plant physiology and to research workers with plants. The first section of 230 pages includes experiments suitable for a general course in plant physiology, and ranging from elementary to advanced. In the second section, from pages 231 to 416, are given directions for standard bio-chemical, bio-physical and bio-mathematical determinations such as are made by advanced students or beginning research workers, covering chemical analysis of plant materials, physical measurements, and measurement and control of plant environment. Highly specialized methods of advanced workers are not included. A concise chapter (pp. 383-416) on the statistical analyses most used by biologists is contributed by George W. Snedecor, professor of mathematics, Iowa State College.

The appendix comprises 33 tables, many of which may not be readily available to the plant worker. References to literature are not abundant and have been chosen to supplement the text rather than to indicate sources of material.

-- H. R. Fulton

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., March 1, 1937 No. 5

Bud Selection with Lemons. "Without careful and systematic bud selection in propagation, commercial lemon plantings tend to become inefficient through the presence of trees of inferior strains that have been unintentionally propagated from undesirable limb and trees varieties," says Technical Bulletin No. 531 of the Department's series, just issued: "Bud Selection in Eureka and Lisbon Lemons and Progeny Tests and Bud Variations," by A. D. Shamel, C. S. Pomeroy and R. E. Caryl.

The commercial culture of the lemon in this country is at present largely confined to the southern counties of California, the beginning of the industry dating back to the introduction of the Lisbon variety from Australia in 1874, and the originating of the Eureka at Los Angeles in 1877. In the season of 1934-35 a total of 19,604 carloads of these two varieties were shipped from California.

The investigations reported on were undertaken to determine the nature and frequency of the occurrence of bud variations in the fruits and foliage, and indicate clearly that through bud selection based upon performance records it is possible to isolate and propagate inherently stable and commercially superior strains, thus avoiding the propagation of trees of inferior strains. In established bearing orchards the inferior-strain trees can be eliminated profitably through top-working or replanting.

The elimination of inferior-strain trees results in increased and improved production and reduces the losses due to the work of assorting and disposing of the undesirable fruits that are borne on such inferior trees.

DECIDUOUS FRUIT INVESTIGATIONS

W. W. Aldrich, Medford, Oreg.

"Continued wind and snow or rain encouraged us to concentrate all our efforts upon analytical work in the warm and dry laboratory," he writes from the U. S. Pear Field Station on February 8th. "Determination of total sugar content of Anjou blossom samples from the 1936 Stratton pruning plots showed a slight but consistently lower sugar content with 'heavy' than with 'no pruning.' This result agrees with our analyses of 'light' and 'heavy' pruning of Anjou in 1934 and in 1935. We shall now dust off the 1935 samples and the pruning plots started that year at the Medford Experiment Station and find whether these plots also show the same thing. Although I do not attach great importance to the slightly lower sugar content of blossoms on heavily pruned trees, this result does bear out Dr. W. H. Chandler's contention, made some 16 years ago, that the stimulatory effects of pruning could hardly be caused by increased sugar per growing point."

He had written February 1: "Auction prices on Anjou pears, like the prices on Delicious apples, have reached an unusually high level. On the New York market Extra Fancy grade of Anjous has consistently brought $3.10 to $3.63 per box, which means about $1.20 to $1.73 net to the grower. Winter Nelis also brought high prices--about $2.50. Late offerings of Bosc and Comice brought about $3.25 and $3.00, respectively. These high prices for Bosc are, from the 'long view,' undesirable, since they will encourage late holding and selling of Bosc at a time when Bosc can not be expected to ripen with even fair quality. A recent letter from Dr. C. O. Bratley advises that several lots of Bosc reaching New York in mid-January 'failed completely to reach any degree of edibility' and 'were badly affected with internal breakdown.'"

H. F. Bergman, Amherst, Mass.

Writing from the Cranberry Disease Field Laboratory on February 6, he reports: "Additional cultures of rotten berries from storage samples of cranberries have been made this week. Cultures made earlier in the season have been examined and partly identified. Most of the cultures of berries from plots on two bogs have been identified and show a very distinct difference in the organisms causing fruit rot. From one section on the State Bog Diaporthe is the most abundant early in the season, while from the other bog Sporonema is most abundant and Glomerella is second in importance. The latter bog is wetter than the State Bog, which probably accounts for the presence of so much Sporonema.

"Hybrid cranberry seedlings from seeds planted in sand are growing nicely and so far are free from fungi, being better in this respect than those on water-agar in test tubes."

DECIDUOUS FRUIT INVESTIGATIONS

Lee M. Hutchins, Fort Valley, Ga.

Writing from the U. S. Horticultural Field Laboratory on February 9, he says: "It is raining hard here today. Dr. Weinberger, in his weekly report, has given account of the condition of peach blooms and crop prospects in general. In no year since I have been working in Georgia (since 1921) have I seen the peach buds in such an advanced stage of blooming on February 9, almost a month earlier than normal for this district. As described in my last weekly report, buds of Early Hiley and Elberta had expanded considerably and some blooms were open at that time. During the last several days this development of the flower buds has progressed. Early Hiley trees in our rootstock orchard and in younger blocks of trees on the Hale farm are from 25 to 50 percent in full bloom; in older blocks they are from 2 to 10 percent in full bloom. I examined a representative number of buds and blooms and found none killed by frosts or freezes as of this date....

"A letter from J. O. Langdon, Woodbury, Ga., states on February 5: 'The buds in this section continued to advance until for about a week past we have been able to see some scattered wide open blooms on Elbertas in all conditions and ages of trees.... A careful checkup yesterday indicates approximately 25 to 35 percent of the buds killed. It seems to take them in all stages from tight buds to blooms. The Rose were least hurt and Georgias most.... We have a fine crop of buds and can take this loss without effect on the yield, if more of them do not occur.'

"Charles Alden called at the laboratory today and stated that at Cornelia the buds are noticeably swollen, many of them showing a green calyx, and that none had been killed up to date. During our visit to Harriman, Tenn. on February 5-7, we found that Elberta buds at that point were swollen so that they were in the light gray stage of development. A very appreciable percentage of these buds have been killed, perhaps 25 percent. Dr. Hy. M. Carr of Harriman states that he looks for the entire crop to be killed, as he is certain the buds will continue to develop with warm days and that they will suffer one or more heavy freezes during February and March."

J. H. Weinberger, Fort Valley, Ga.

"The crop prospects continue to look good for this section, although we have had a few days during the past week of what the natives call 'hog-killing weather'" he writes February 15th. "Mr. Snapp, at Fort Valley, and the Macon Weather Bureau recorded official minimum temperatures on February 11 of 26°F. The day previous, realizing freezing temperatures were probable the next morning, I dusted off the thermograph at the Laboratory, adjusted it and set it out in the open without any protection whatever. A minimum of 20° F. was recorded that night, with a strong wind blowing. At 7:30 the temperature was 28°F. and the thermograph was again checked with two mercury thermometers, which in turn were later checked and found correct in cracked ice at 32°F.

DECIDUOUS FRUIT INVESTIGATIONS

J. H. Weinberger (continued)

"It seems probable that the trees in this section were subject to a temperature of 22°F. and it is interesting to note the hardiness of the bloom. The Early Hiley variety in the stock orchard, about 15 percent in full bloom, with nearly all buds showing pink except those on the basal portion of terminal twigs, showed 40 percent killed buds on the spurs, and 29 percent of the buds injured on the terminals. However, those in full bloom showed relatively little greater injury than those less further advanced in Mr. Baird's Early Hiley block adjoining, the trees were less advanced, and over 50 percent of the buds were killed. The majority of these buds were not advanced enough to show green. Possibly the slow development of the bloom may have something to do with its apparently relatively greater hardiness here than at Beltsville, Md. Our orchard of Early Hiley has shown considerable bloom for three weeks, and yet is only about 50 percent in full bloom at the present time. It will probably be blooming for another two or three weeks.

"Counts on the Hiley variety nearby showed 50 percent of the buds killed on trees about 35 percent full bloom. Injury was slightly more severe on open blossoms than those not showing pink, and some injury occurred to this variety prior to the last freeze.

G. A. Meckstroth, Willard, N. C.

Writing from the Coastal Plain Station on January 23, he tells of attendance at meetings in Columbus County called by the county agent for a consideration of strawberry diseases. "I reviewed briefly the results of our spraying test during the past season at the Coastal Plain Station which showed that four spring applications of 4-4-50 bordeaux not only reduced the amount of leaf spot but also increased the yield by about 26 crates per acre and also improved the condition of the caps," he writes. "The difference in the appearance of the sprayed and unsprayed rows was very striking. The Klondike variety is very susceptible to scorch and it is believed that spraying will pay large dividends. None of the growers in the Chadbourne area have been spraying in the past, but if foliage diseases occur annually as they have done in the last two or three years it will be necessary for the growers to use control measures....

"The scorch disease seems to be spreading and new infections appear to be taking place right along. Last week I examined some leaves in a field of Missionary here and had to look closely to find young leaves that did not show spotting. In order to check on new infection I tagged 50 young leaves on January 12 and then examined them on January 21. After 9 days over half of these leaves showed definite spotting due to new scorch infection. This is not surprising, since we are experiencing unseasonably warm weather. Ordinarily we have much colder weather here during December and January, which would tend to keep in check the spread of the scorch disease."

DECIDUOUS FRUIT INVESTIGATIONS

G. A. Meckstroth, Willard, N. C. (Continued)

"The long expected break in the winter heat wave which we have had here for the last two months finally came," he writes February 6th for the January 27-February 6 period.

"On February 3, 4, 5 and 6 the following minimum temperatures were recorded at the station: 27, 21, 32 and 23. These frosts killed practically all fruit, blossoms and buds on strawberries. A few very tiny buds may have escaped, but in nearly every instance examined they were dead. This means that an entirely new crop of buds will need to be put out.

"Some growers were hoping that we would escape these frosts, since the plants were so heavily loaded with blossoms and fruit which would have resulted in an unseasonably early crop. Judging by past years, the buds which open within the next three weeks or so will in all probability be killed. If we have several more intervals of unseasonably warm weather like we have had recently followed by frosts, they may result in a very light ground crop and a fine heavy crown crop when it comes on later."

John C. Dunegan, Fayetteville, Ark.

"The roads throughout the district are in bad shape and I have not left the laboratory the entire week," he reported for the week ending January 30th. "One grower from Springdale tole me yesterday that the peach buds are showing a high mortality. He claims that the damage occurred during the past ten days, but we have had no particularly low temperatures and I suspect that he is in error on this point."

He wrote February 6th: "A number of bundles of peach twigs were collected from orchards in the Springdale section and the buds showed a high mortality--the results are tabulated below:

Examination of Peach Buds from Springdale, Ark.
February 3, 1937

Orchard	Variety	Age	Number of Branches Examined.	Number of Buds Examined.	Number of Buds Alive	Number of Buds Dead	Percent Dead
Brogdon	Elberta	10 yrs.	25	528	99	429	81.2%
Lucas	Elberta	6 "	24	475	129	345	72.6
Brogdon	Elberta	20-30 "	19	395	72	323	81.7
Boone	Elberta	15 "	32	695	67	628	90.3
Brogdon	Ga.Belle	20-30 "	32	770	330	440	57.0

BIGGER AND BETTER STRAWBERRIES--AND MORE OF THEM

Larger-sized and better-quality strawberries, and heavier yields as well have been produced in field tests by the thinning and spacing of the runner plants and keeping off all additional plants once a good stand has been obtained, says a release from the Press Service reporting on Dr. George M. Darrow's studies in this field.

"Benefits of the spacing have been easily apparent and yields were multiplied two to three times in some instances. In a study to see why the spaced row gave the better result it was found that the number of leaves produced by the plant during the previous fall gave a good indication of what the yield might be the next spring--weather conditions being favorable. Tests with different varieties showed similar results. In a study of the Blakemore in North Carolina in 1934 and 1935 it was found that plants producing only two leaves in the fall of 1934 produced an average of 9.1 berries the following spring. Plants with 4 leaves produced 12.5 berries; 6 leaves, 20.2 berries; 8 leaves, 22.8 berries; 10 leaves, 29.4 berries; and 13 to 22 leaves, 45.6 berries.

"A plant that grows in a very thickly matted row produces two leaves on an average, which shows the advantage of allowing the plant plenty of room in the row. In 1935 further tests along this line were carried out with spaced rows in which a plant that had 42 leaves produced 230 berries; 21 leaves, 142 berries; 11 leaves, 102 berries; 8 leaves, 66 berries; and 4 leaves, 42 berries. In the tests the spaced rows of plants have been kept the same distance apart as the matted beds. However, the plants are spaced 6 to 12 inches apart in the row which allows the plant a greater amount of soil in the bed from which to draw its moisture and plant food.

"A distinct advantage of the spaced rows has been noted in years of drought, although severe dry weather such as that experienced in parts of the fruit belt last year was too much even for the spaced row crops. But fair crops have been harvested from the thinned fields when the matted rows failed to produce at all. A large part of the moisture was lost in the matted row through the few leaves from the many plants.

"Growers have found it easier to harvest the spaced-row crop as a smaller number of berries are left to become over-ripe."

If the grower is not in a habit of mulching his beds in the fall, spacing may prove a disadvantage as severe cold in the early fall or winter may result in severe damage which otherwise would not result if the plants were thickly matted. However, mulching will pay better when the grower has a good field of spaced plants than it would in an ordinary field of matted plants. The cost of spacing, of course, varies with the season and the cost of help as well as the variety grown.

LEMONS FOR FLORIDA

It is becoming more and more apparent that we have supplied Florida with the lemon variety it has so long needed. The State, of course, produces excellent oranges and grapefruit, but lemon culture has been unsuccessful largely because the lemon there is susceptible to citrus scab, a trouble difficult and expensive to control. The lime is seriously handicapped by withertip.

The new lemon--it is really a lemonime, a cross between the Mexican lime and the Genoa lemon--has inherited immunity from withertip from the lemon parent, and immunity to citrus scab from the lime! Since it looks like a lemon, tastes like a lemon, and can be used for any purpose for which a lemon is needed, we introduced it some years ago simply as a new lemon, named the Perrine after Dr. Henry Perrine, the first man to undertake seriously the planting of tropical plants in south Florida. The "wild" lime groves of Florida originated from a handful of seed he brought back from Mexico about 1826.

Like most horticulturists, Dr. Perrine was a man of sterling honesty, as indicated by the fact that he was selected to accompany Richard Rush to England to bring back the money left by John Smithson for use in establishing what we know as the Smithsonian Institution in Washington, D. C.

The latest confirmation of our hopes for the Perrine lemon comes from a Florida correspondent who writes of a five-acre grapefruit grove topworked to the Perrine three years ago this spring. The crop the present season has already netted $2,000--and one-third of the fruit is still on the trees. The average yield has been from 5 to 6 bushels to the tree, but some trees are bearing as much as 8 to 10 bushels of fruit, an amazing record even where (as in this case) they are growing on vigorous root systems 10 to 12 years old. The fruit shows no scab or melanose, so that practically no expense for spraying is necessary!

Florida has been in the habit of importing about $1,800,000 worth of lemons each year, largely from Italy. The Perrine appears likely to supply this demand ultimately and, as one Florida grower has pointed out, $1,800,000 represents 6 percent on an investment of $30,000,000.00. Too, there is an excellent market for lemons awaiting Florida growers right in their neighboring States.

Also, $1,800,000 represents a good bit more than the total cost of all the investigations of our Division, so that handing out lemons of this sort is a very commendable thing indeed!

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

Writing on January 30th he says: "For the past few weeks California has certainly had very unusual weather. The temperatures have been exceedingly low over a long period. Severe cold winds have been common. We have had a number of heavy rains and two snowstorms in this part of the Sacramento valley, where snow is not supposed to fall. One storm covered the ground with several inches of snow in various parts of the valley. Considerable damage has been done to various crops, such as citrus trees, by the severe cold weather. Almond trees were sufficiently dormant so that no damage is expected. I noticed a few walnut buds on the tips of twigs which were apparently injured, but on the whole, it seems that walnut trees were sufficiently dormant in this part of the valley to withstand the cold. Some believe damage may have occurred in parts of the walnut sections. Walnut trees were much more completely dormant than was the case during the freezing weather several years ago when extensive damage resulted.

"Because of the cold weather, early blooming almonds have not blossomed as yet, although the buds show signs of swelling. It is certain that when the warm weather comes the almonds will bloom suddenly, and, according to previous records, early and late varieties should bloom closer together than was the case last year. The total length of the almond blooming season is expected to be less than the average.

"Plans have been made for the distribution of the new promising almond hybrids 8-31 and 8-32 to various orchards for trial purposes. These will be distributed mainly as replants for replacing trees which died in trial plantings made previous to this time. Also a few of them will be distributed to new sites where the conditionsmay be somewhat different from those where the trees are already growing. It is necessary that the trees be distributed before the almond breeding and pollination work begins. Some of the hybrid trees 8-31 and 8-32 first distributed bore a few nuts this season and several growers have written enthusiastically about them. Some growers write that several commercial concerns are becoming interested in these new nuts."

Max B. Hardy, Albany, Ga.

"As varied observations accumulate it becomes more and more apparent that in the Southeast the use of a mulch of some kind is a great aid to soil moisture conservation and plant growth," he writes January 30th. "Just what is the best material for this use is not yet known, but it appears that material of any kind is better than none....Our records for the rainfall at Philema show a total of 58.3 inches received in 1936. This total is about 8 inches above normal."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"According to weather statistics recently released by the college meteorologist, January 1937 was next to the coldest month ever recorded by the Oregon State College weather bureau, whose records go back for some 46 years," he writes February 6th. "For 12 days the minimum temperature was 22°F. or below; 9 days registered 21° or below, and 7 days 20° or below. The normal rainfall for the month is 6.61 inches, and 6.26 were actually recorded. Total snowfall for the month was 22 inches. Past snowfalls of over 20 inches recorded at Corvallis were as follows: January 1909, 23 inches; January 1916, 22.4 inches; and December 1919, 22 inches. The temperature for the past month averaged 5 degrees lower than any other previous January in 46 years."

He had written January 30th: "The weather during the past week has been characterized by below-normal temperatures accompanied by considerable snowfall. Up to 6 inches of snow has fallen in some parts of the Willamette valley. There is now about 2 inches of snow on the ground at Corvallis. The below normal temperatures which have existed throughout most of the month of January have slowed up filbert development greatly. The White Aveline and Barcelona varieties are normally shedding pollen by the last of January. The catkins on these varieties are just starting to elongate and none are shedding pollen at the present time."

J. R. Cole, Albany, Ga.

Writing on February 6th from the U. S. Pecan Disease Field Laboratory, he says: "Pecan growers have at last realized that they must control rosette in the southeast to get the maximum production of nuts. Two carloads, 18 tons per car, of zinc sulphate (36 percent zinc) have been shipped to distributors here in Albany, one in Camilla and one in Thomasville, 26 and 60 miles south of Albany, as well as several into Fort Valley and Montezuma, above Albany. Of course, a considerable amount of the zinc sulphate shipped into the latter two places will be used for spraying peach trees. It is estimated that only one carload of the zinc sulphate was used to treat the rosetted trees in this vicinity last season.

"Old Man Winter struck with a light freeze on the morning of February 6th, the first freeze since about the middle of December. This should prevent the pecan trees from foliating for several weeks now."

Writing on February 13th he said: "The assimilation of data for the past season's work was continued. These data indicate that controlling scab on the Schley variety will pay the growers, even though the price of nuts is very low. If the grower has a fair set of nuts he can't afford not to spray!"

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASES INVESTIGATIONS

W. T. Pentzer, Fresno, Calif.

"This is the time of the year when activities consist of storage inspections and preparation of reports on the work done in the summer and fall months," he writes February 12th.

"During the past six weeks, we have made two inspections of Anjou pears for scald, making observations on its control with oiled wraps. Final inspections were made on the 1936 grape pack last week and notes taken on the condition of various experimental packs. The commercial storage season of grapes has ended and our observations and those of commercial storage agencies indicate that the past season was not a good one for the storage of grapes. Very few Emperor grapes were harvested before heavy rains, and it was evident after several weeks' storage that mold, chiefly Botrytis, had infected many grapes while they were still on the vine. Little could be done with this fruit except move it to market as soon as possible. The maritime strike also necessitated holding export grapes in storage beyond their expected life, further complicating the marketing of storage varieties this past season....

"Little need be said of the weather during the past month, other than to report that it has been unusually cold."

FRUIT "BUY" PRODUCTS

Fruit Juice Business — An extract from Business Week (December 26) in the Department's Daily Digest, indicates that the fruit juice industry has graduated from the ranks of by-products into that of "buy" products. "The total annual pack of fruit juices, including tomato juice, is now valued at $25,000,000.00, and is almost as large as the production of any one of the three canned vegetable stars--tomatoes, peas, and corn--and larger than any of the big three of canned fruits, peaches, pineapples, and pears. And the juice industry appears to have developed without upsetting any part of the packing field.

"The 345,000 tons of fruit which were turned into preserved juices last year mounted to 3-1/3 percent of the nation's total supply of fruit and even the canned fruits normally take only 10 percent of the total yield. More than one-fourth as much fruit was made into juice as was dried. An analysis of figures prepared by the National Canners Association shows that, out of every 100 cases of canned fruit and fruit products produced in the United States last year, 13 cases were canned juice. Adding the bottled juice and canned tomato juice output, the entire straight canned fruit pack was less than 2-1/2 times larger than the juice production. This growth, it must be remembered, has all taken place within 10 years....The public will now find on grocery shelves such newcomers among preserved juices as apricot, peach, pomgranate, cherry and prune in addition to the well established favorites--grapefruit, pineapple, orange, lemon and loganberry...."

ADMINISTRATIVE NOTES

Appointments "Scattered throughout the field, there is a considerable amount of employment of individuals appointed on an hourly basis, the work being above unskilled labor and coming within the classified service, but with a restriction to the effect that employment in any one month shall not exceed $45.00," says a memorandum from the Office of the Chief of Bureau, No. 926, dated February 2.

"In some cases, the restriction is on the year instead of the month, the maximum permitted during the year being $540.00. In a number of cases recently employees of this character on the rolls of one Division have been employed by another Division under letter of authorization, the sum total of the reimbursement exceeding the restriction in the appointment. This is, of course, illegal. A person under this type of appointment can only be employed under that appointment.

"Unskilled labor appointed on a w.a.e. basis can be employed by more than one Division as long as the rate of pay is that called for in the appointment and duplicate payment for any particular time is avoided. Where an employee is under appointment in one Division on a w.a.e. basis, another Division wishing to employ the individual should first make arrangements with the Division holding the appointment. Unskilled labor not under appointment may be employed under more than one letter of authorization as long as care is taken to avoid duplicate payment.

"Members of your staff who have occasion to employ personnel should always first ascertain whether an individual is employed by any other branch of the Government."

Freight Rates, Adjustments, etc. The Regulations governing the operation of the Procurement Division (Treasury Department), approved by the President of the United States, provide that it shall handle all matters relating to special arrangements or special rate agreements applicable to the transportation of Government property, to freight classifications, and to other special items such as demurrage and storage charges.

Effective immediately, therefore, all requests for special rates on any shipments must be sent through our Business Office at Washington, D. C. so that we may arrange for handling by the Procurement Division in accordance with the Regulations.

Out employees must not contact railway or other common carriers in connection with such arrangements.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

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Pecan Scab. The chief examiner was scolding his new assistant. "How did it happen that you marked this man's paper 101 percent?" he demanded. "Don't you know that nothing can be more perfect than 100 percent?" The assistant nodded. "Yes, sir," he admitted, "but this man answered one question that we didn't ask."

Well, I believe I have two more candidates for the 101 percent rating. After reading the paper given by J. R. Cole and J. R. Large at the meeting of the Southeastern Pecan Growers Association late in February, in which they reported on the control experiments with pecan scab, foliage diseases and rosette for 1936, I am inclined to think that these men have done even more than required or expected of them.

With pecan scab in particular, their work has demonstrated rather conclusively that the spraying procedure they have been recommending will pay dividends almost regardless of the price at which the nuts are sold. Pecan scab, of course, is now a serious problem though only a very few years ago it was limited to a narrow territory along the Gulf Coast and only a few varieties were known to be susceptible. Today it causes from partial to total loss of nuts of such important pecan varieties as the Alley, Delmas, Pabst, Schley, Van Deman, Success and Nelsen throughout Florida and in Georgia, Alabama, Mississippi and Louisiana south of a latitude extending from Macon, Ga., through Montgomery, Ala., Meridian, Miss., and Alexandria, La. Varieties once thought immune are being attacked--in fact, scab has been found attacking every important commercial variety in some area in the pecan belt. The Teche is considered to be one of our most resistant varieties, for example, yet scab has been collected from the nuts of the Teche in south Georgia and central Alabama.

NUT INVESTIGATIONS

Pecan Scab (continued)

At the 1936 meeting of the Southeastern Pecan Growers Association at Albany, Ga., Cole and Large discussed low-lime bordeaux mixture, copper sulphate solution, and copper sulphate solution plus summer oil emulsion as sprays used for the control of pecan scab. They suggested that one or two prepollination sprays of a weak and low-lime bordeaux mixture having the composition of 2-1/2-50, followed with the usual number of cover sprays as in the regular spray schedule but using either a 2-1/2-50 or 3-1-50 bordeaux mixture or a copper sulphate solution containing one pound of copper sulphate in 50 gallons of water with one quart of summer oil emulsion would give good control of scab. Experiments were continued during the past year and support this belief.

The plot that received three applications of 3-1-50 bordeaux mixture showed the greatest net profit from spraying--$8.40 per tree. That is, the check trees produced an average of 14 pounds of nuts to the tree, of poor quality, worth perhaps a maximum of 10 cents a pound. These trees were not sprayed at all. With the 3-1-50 bordeaux application, trees produced an average of 71 pounds to the tree, of excellent quality nuts, worth 15 cents a pound. Since the cost of spraying averaged about 85 cents to the tree, the net profit per tree from spraying was $8.40. The rather odd feature of this showing was the fact that at the beginning of the season the plot sprayed was actually more severely infected with scab than the others!

The next greatest net profit from spraying was $6.52 a tree, on the plot sprayed with a 3-1-50 bordeaux mixture, preceded by one prepollination spray application of 2-1/2-50 bordeaux mixture. The difference between this and the $8.40-dividend plot is probably due to the fact that the latter had a heavier bloom.

In another orchard, near Albany, Ga., where the experiments were duplicated, the yield averaged 59 pounds to the tree on the sprayed plot with one prepollination application of 2-1/2-50 bordeaux mixture followed by three applications of 3-1-50 bordeaux mixture. The production on the unsprayed check plot averaged 17 pounds of nuts to the tree.

The experiments of 1935 and 1936 indicate, therefore, that one prepollination spray application consisting of 2-1/2-50 bordeaux mixture and made when the first leaves are one-fourth to one-half grown, followed by three applications of 3-1-50 bordeaux mixture, the first applied soon after pollination is complete and the other two at intervals of three to four weeks, will give commercial control of pecan scab.

NUT INVESTIGATIONS

B. G. Sitton, Shreveport, La.

"On January 9th a slow rainfall occurred with the temperature below freezing," he writes February 25th from the U. S. Pecan Field Laboratory.

"Ice formed on pecan trees and everything else exposed, from 1 to 1-1/2 inches thick, according to reports. The excessive weight broke the branches of most of the trees in this territory. In the Combination Orchard (about 1,000 trees) probably 80 percent of the pecan trees are seriously damaged. Trees of the Stuart variety suffered more than the others, but the Schley almost as much. Delmas trees were not damaged so badly. On the Stuart and Schley trees most of the main erect branches broke, and in many cases every branch on the tree broke. In some cases the trees were split at the first crotch, so that the entire tree was destroyed.

"It is estimated that it will require at least three years for this orchard to recover from the ice damage. The removal of the broken branches is a big job, and it is often very difficult to decide just how to go about pruning the trees to best advantage. Mr. Butterfield has had a crew of about 15 men working for 10 days and has covered perhaps one-fourth of the orchard. A great deal of follow-up work will be necessary, too, in order to limit the amount of damage from sun scald and wood rot, and in order to secure good healing of the wounds."

C. E. Schuster, Corvallis, Oreg.

"The filberts are in full bloom," he reports February 27th. "The catkins of the Barcelona are shedding pollen freely at about the same time that the catkins of the pollenizers are shedding. Normally the Barcelona is through shedding pollen before the others begin. If the pollen is of good quality there should be an excellent set of fruit, as the female flowers seem to be very healthy and vigorous and in great abundance. Our tests on pollen have not been satisfactory this year."

On February 13th he had written: "One day this week I visited an orchard near Forest Grove to obtain some pollen. The snow at that place was 10 to 12 inches deep. Back in the hills two or three miles away it was 6 feet deep, I was told. Here in Corvallis the snow is now practically all gone, and the weather sunny.

"The first of the Barcelona catkins were noted to be shedding pollen on Wednesday. The regular varieties for pollination have barely expanded the catkins a little bit. The female flowers of the Barcelona are just coming through in good shape, while on some of the later varieties there is no evidence of bloom of in any form."

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"I was surprised to see the damage done in the valleys by the cold weather," he writes February 20th. "In many sections all foliage on eucalyptus trees has been killed and it seems probable that the trees have been killed outright. Palm trees also were injured. Possibly some damage has been done to walnut trees where the freeze was heaviest, but it is believed that they were sufficiently dormant so that no damage resulted."

He had written February 13th: "During the past two weeks correspondence has been quite heavy in regard to matters pertaining to the planting of almonds. There seems to be especial interest in planting almonds and no doubt the acreage planted this year will be quite large. I am trying to discourage the planting of almonds under unsuitable conditions, otherwise there would be a large acreage of plantings which would always be marginal and would result in loss to the growers. Many of the plantings to date, however, have been on good soils and under favorable conditions. There is much interest in all kinds of nut trees in California, but the main interest seems to be in the almond."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"Mild spring weather has replaced the winter weather during the week and the peach and plum buds are decidedly swollen," he writes on February 20th. "If the mild weather continues these trees will be forced into a very early blooming period. So far the apple buds show no response.

"Peach mummies at the University of Arkansas orchard were examined during the week and apothecia were all beginning to develop from them. At the present time apothecia have not appeared above ground and consist merely of short stipes 1/4 to 3/4 of an inch long with slightly swollen tips which will later expand into the hymenial layer.

"Over-wintered apple leaves showing numerous blotch lesions were also examined in the hope of finding a perfect stage of Phyllosticta. The pycnidia which formed abundantly on the leaves last fall were found to be empty, indicating either that the spores were discharged last fall or that the contents disintegrated during the winter. I was surprised to find the pycnidia empty. I had anticipated finding a mass of conidia in the center or at least a masse of pseudo-parenchyma from which spores would be formed later in the season. I will examine more pycnidia to verify these preliminary observations."

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"A minimum temperature of 25°F. was reported on the morning of the 26th at Macon and Fort Valley, with our thermograph, in a more or less protected place, registering 26°," he writes March 1. "No frost accompanied the freeze. The damage was quite severe, 50 to 70 percent of the live blooms on Hiley and Early Hiley being killed. Practically all of the blooms examined in which the peach had commenced to grow were injured; those open blooms which apparently were not yet fertilized showed an occasional live pistil, while there was relatively little injury to buds in pink and pre-pink stages. Early Rose trees had 20 to 40 percent of the buds killed (different orchards) exclusive of previous damage. Uneeda, near Fort Valley, about 10 percent full bloom, showed 30 percent of the buds killed.

"Yesterday (Sunday) a trip was made to the Thomaston section to study freeze damage. A young Hiley orchard, about 10 percent full bloom, had a good crop of buds, and though examination showed practically all open blooms dead, only an occasional dead pistil was found on unopened buds. On the other hand, in an Elberta orchard, in weak condition, with most of the bloom on short spurs and well advanced, about 70 percent of the bloom was killed. Other orchards were in similar condition, the amount of damage closely associated with the stage of advancement of the blooms. No reports have been received or observed from north or south Georgia on extent of damage. Atlanta had a minimum temperature of 20°F. and Thomasville, near the Florida line, 34°.

"About 60 percent of the blooms emasculated and pollinated on the tree in the tent have been injured and whether the remainder were fertilized is problematical. During the past week there have been only a few hours with temperatures above 60°F. and 115 hours of 45° or lower. The total is near 715 hours. With poor pollination weather and freeze damage, it does not seem possible that a mazimum crop of fruit can be produced in this section this year, especially on Hiley and Early Hiley, which make up a large percentage of the orchards. On the other hand, there has been no serious reduction of live buds in healthy orchards. An examination of the weather records for the past 37 years shows that in 24 of those years the minimum temperature for March has been 28°F. or higher, and in 16 of those years no freezing temperatures were experienced in March at Macon. So the chances for a crop in this section are fair.

"An attempt was made to cross- and self-pollinate blooms of seedlings of FPI 61302, which are nema-resistant, to determine the effect of pollen parent on nema-resistance of the seedlings. The blooms were farther advanced than Early Hiley blooms, and the last freeze was particularly hard on them.

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger (continued)

"A new method (patent not yet applied for) has been developed for bagging blooms for pollination purposes. A single wind-and-rain-storm tore off every paper bag I had put on the trees, so the following method was devised: A tube, about 2-1/2 inches in diameter, is made out of heavy wrapping paper with the aid of a desk stapling machine. This is slipped over a terminal branch and tied at both ends. Supported in this way the paper does not touch the blooms, and the wind cannot whip it around. Thus far, wind and rain have not affected the tubes in the slightest, though the ultimate success of the pollination remains to be seen."

W. W. Aldrich, Medford, Oreg.

"The problems involved in taking soil samples for gas analysis and also measurement of new, whiteroot growth have been solved," he announces in his report of February 22d. "We now have 20 gas samples in vials awaiting analysis for oxygen and carbon dioxide by the Bonnier-Mangin method used by Dr. Magness for fruit and vegetable internal-gas analysis.

"Gas samples taken from fairly dry soil last December show about 1.5 percent carbon dioxide in a heavy loam soil and about 4.0 percent carbon dioxide in clay adobe soil. Gas samples taken recently from a heavy loam soil near the field capacity for soil moisture show about 6.0 percent carbon dioxide. (Samples from the clay adobe soil have not been run.)

"Measurement of new white root growth this week shows the same total length for the top foot in clay adobe as shown the previous week. The third foot, with relatively low soil moisture and also relatively less old roots, showed only about one third of the new white growth shown in the top foot."

February 15th he had written: "Although air temperatures during the previous week were between 24° and 44° and soil temperatures between 33° and 37°, our root examinations showed a large amount of new root growth in clay adobe soil. This occurred in the 6-18 inch depth (only depth examined) while the soil moisture was above the field capacity. No appreciable amount of new root growth was found in a heavy loam soil, with soil moisture just below the field capacity. This contrast seems strange, and we have no theory at present to explain it."

DECIDUOUS FRUIT INVESTIGATIONS

M. A. Smith, Columbia, Mo.

"Mr. P. H. Shepard, Director of the Missouri State Fruit Experiment Station at Mountain Grove, Mo., reports good prospects for a crop of apples, cherries, plums and grapes in the experiment station orchards," he writes from the Fruit Disease Field Laboratory. "He estimates that 75 percent of the peach buds have been killed. The low temperatures of January were apparently responsible for this damage. A number of members of the Ozark Fruit Growers Association report that because of the drought last year peach trees in the south and southeastern parts of Missouri made little growth. Many of the fruit buds which were formed were not strong enough to resist the low temperatures of January. Reports from southern, central and northwest Missouri indicate that orchard soils are now plentifully supplied with moisture."

R. B. Wilcox, Pemberton, N. J.

"Several cranberry growers have just completed their re-sanding operations for the winter and have applied a flood, to be held until May," he writes from the Cranberry and Blueberry Disease Laboratory on February 15th. "Others, reversing the process, will remove the winter flow within the next two weeks to start sanding. The lack of water coverage does not appear to have injured any bogs at this time, either by freezing of buds or forcing them into growth. Blueberry pruning is at its height."

C. O. Hesse, Davis, Calif.

"While the buds have been advancing rapidly during the week of continued warm weather only one (*P. mume*) showed any bloom," he writes February 20th. "The dates of first bloom in this case were February 15 and 18, the former being a very dwarfed tree on Myrobalan roots. The seeds resulting from the 1936 crosses were also planted in the lath house this week. There were only 225 seed to be planted after the disastrous results of last year's spring frosts. The seed were divided into 80 plum seed from 14 crosses (0.7 percent set), 144 apricot seed from 19 crosses and selfs (3.1 percent), and 1 seed from an interspecific cross. January 25th was spent in completing the pear seedling planting. A total of 2,105 Bartlett seedlings are now established at Davis, in addition to the group started some years ago."

HORTICULTURAL FIELD STATION, CHEYENNE WYO.

A control experiment was begun the week of February 21, to determine the effect of hot, drying winds on growing peas. A glass enclosure has been rigged up in the northeast greenhouse, with a fan driving the hot air across the potted pea seedlings, using a hot-water heating plant and an automobile radiator to produce the hot air. Darned clever, these Cheyennese !

HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Vegetable Crops (George P. Hoffman)

"The 'delayed harvest' sweetpotato plots have all been harvested and a very careful examination of the roots would seem to suggest that sweetpotatoes may be allowed to remain in the ground without apparent injury 30 days after frost when weather conditions are similar to those reported for Meridian during October, November and December, 1936," he writes February 13th. "Fifty and eighty days after frost greatly increased the percent of decay and made for very unsatisfactory curing. As might be expected, the lot allowed to remain in the ground 80 days after frost was very bad. The last digging revealed the following indicated conditions:

Plot A - 22 good roots and 9 decayed roots
Plot B - 47 good roots and 15 decayed roots
Plot C - 41 good roots and 1 decayed root

"It should be recalled that plots A, B and C, immediately following the first frost, had the vines cut and removed entirely, vines cut and used as a mulch, and vines undisturbed, respectively."

He had written January 30th: "Our weather for the month of January has capped the climax--28 cloudy and 3 partly cloudy days; 18.77 inches of rain, excess rain for this month as compared with the normal (5.32 inches) 13.45 inches. The ground has, as might be expected, reached a point of full saturation and much fertility has gone with erosion."

Fruit and Vegetable Storage and Utilization Investigations (J.M.Lutz)

"During the week ending February 13, together with Mr. Hoffman, cooking (baking) tests were made on the delayed harvest sweetpotato samples. Leaving the sweetpotatoes in the ground 30 days after frost had no apparent detrimental effect on the potatoes. The samples dug 50 days after frost showed marked injury, and the samples allowed to remain in the ground 80 days showed very severe injury. On the basis of these results it appears that sweetpotatoes can safely be left in the ground for 30 days after frost under conditions similar to those which existed at Meridian in 1936."

Small Fruit Investigations (N. H. Loomis)

"Light freezes have killed all open strawberry blossoms and fruits. The bloom was quite heavy on Bellmar, Blakemore, Klondike, Missionary, 218 and 225 varieties. Although it is not unusual for some blossoms of the early varieties to be killed, the crop may be somewhat reduced on these varieties this year since so many flowers were out."

ADMINISTRATIVE NOTES

Read Your Regulations! Once upon a time there was a man whose friends called him Necessity--because he knew no law. However, if you don't know your Department Regulations, there is nobody to blame but yourself. Roy Gillette is calling attention again to the Division memorandum sent out November 16, 1936, referring to the keeping of records at field stations. A recent notice from the office of the Chief of Bureau also calls attention to this memorandum, which advised you to refer constantly to your copy of the new Regulations regarding any procedure concerning which you were in doubt. There is quite a difference between the old and new regulations and it is a whole lot more pleasant to learn this by reading them, than from letters of suspension.

If you haven't received a copy of the Regulations you should apply for one--through your section leader. And if you have one, please consult it frequently until you are familiar with all the problems likely to arise in connection with your work. In this connection, too, make it a practice to follow the administrative notes published in the News Letter; they are our means of keeping you posted regarding the newest rulings and amendments. And get out that November 16th memorandum and read it again!

License plates for Automobiles Speaking of amendments, we have recently sent out Amendment No. 12 to the Department Regulations, superseding instructions in Mr. Gillette's memorandum of December 3, 1936. At that time we advised you to return USDA license plates that had become worn or for which you had no further use. Under the amended regulations (Par. 1836) illegible, soiled, marred or unsightly plates may be forwarded to us--or may be destroyed at the field station and a certificate, giving numbers of plates, sent to the Business Office showing that the plates were actually destroyed.

Holidays We have been getting some definite information lately on the matter of holidays--those apt to come along before December 31, that is. There is quoted below for your information and guidance a letter dated February 11, 1937, from the Acting Executive Director of the National Emergency Council to the Secretary:

"The President has approved the following schedule of holidays affecting Federal employees during the remainder of the calendar year 1937:

February 22d; May 30th (close May 31st also); July 4th (close July 5th also); September 6th; November 25th; and December 25th (close December 24th, all day, also.)"

ADMINISTRATIVE NOTES

Old, brittle Envelopes. Roy Gillette is back on the job after an illness that culminated in the removal of his tonsils. So far as he is concerned, he appears to have had no further use for them, but there is still a little argument here concerning the origin of his trouble. One group contends that it was the receipt of a portion of a very aged, brittle brown envelope in which a field worker had apparently mailed a Library periodical. I say apparently, because we haven't found out yet what was mailed. All we received was a section of the front of the envelope, with frank attached, but without identification marks of any sort. This section crumbled into dust in Roy's hands and he may have accidentally breathed some of the ancient dust, thus setting up a throat irritation and annoying his tonsils, which were in bad humor anyway. The second group, however, believes that his trouble was the direct result of worrying over the lost contents of the envelope.

However that may be, the question has arisen anew in the form of a complaint from the Library that some of our field workers are mailing in periodicals and other publications in old brown, brittle envelopes that will not withstand the handling they receive en route. As a result, they reach Washington so badly mutilated that in some cases it is not possible to determine whether the contents are intact or not.

On a number of occasions in the past we have warned our field station workers to check over their supply of these brown (manila or jute) envelopes and test them to see whether they are so old and brittle that they tear easily. If so, they should be discarded at once and a fresh supply ordered from the Business Office.

In particular, please make certain that any periodicals or publications being mailed to the Library are enclosed in fresh, tough kraft paper envelopes of the proper size.

Appendixes There is, of course, nothing in the Department Regulations to prevent you from having your appendix removed in case it is of no more use to you than Roy Gillette's tonsils were to him. We are, however, a bit more fussy about indexes than appendixes. In particular we want to make sure that the index to your looseleaf volume of Department Regulations is kept up to date.

Amendments Nos. 11 and 15 have just been mailed out. You will note on the reverse of these amendments that they necessitate additions to the index of the volume. May we suggest that you make a pen-and-ink revision of your index (not appendix!) in accordance with the titles shown on these amendments?

ADMINISTRATIVE NOTES

Names on Payrolls — Comments received in connection with the ruling that payrolls and vouchers should be executed in the full name of the individual to whom check is to be sent indicate that the situation is not absolutely clear. The requirements are (1) that on all expense accounts the employee is to execute the voucher, using his full name; (2) in preparing payrolls each individual thereon listed should be by full name; and (3) purchase vouchers (Form 1034) when made out to an individual should show the full name of the individual as the payee. Exceptions to this rule are where a business is conducted under the name of a dealer who uses only his initials. Some employees have felt it necessary to certify on Form 1034 using their full name in signing the certificate. There is no rule against this, but it is not absolutely necessary that the full name be used in making certifications.

In other words--it should be understood that wherever practicable the full name should be used where the payee is an individual.

Cooperative Payments. — There are some occasions where supplies or material are purchased in quantity, part of the cost to be paid by this Division and part by the cooperating agency. The Comptroller General in Decision No. A-77225 has outlined the procedure to be followed in submitting vouchers to cover such purchases.

1. State and certify the voucher in the full amount of expense incurred.
2. Deduct, on the face of the voucher, the amount paid or payable by the cooperating agency, with appropriate notation explaining the basis for the deduction.
3. Show the net amount payable from Federal funds.

This ruling applies only to such purchases as are jointly made for the cooperative work involved. An applicable instance would be, for example, the purchase of 100 tons of fertilizer under a cooperative agreement which provided that the Department should furnish 75 percent of all fertilizer needed to carry on the investigations. The voucher should read:

Fertilizer (describe) 100 tons at $40.00 ...	$4,000.00
25 percent payable by_____under Api_____	1,000.00
Net payable from Federal funds	3,000.00

It is believed that few such joint purchases are made in connection with our cooperative work since provision is usually made in the agreement for furnishing certain facilities by the cooperator and others by the Department. In case cooperative (joint) purchases must be made, the procedure outlined above must be followed.

Vol. 9 No. 6 March 15, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., April 1, 1937 No. 7

Mildew-Resistant Melons

One of the erratic sons of old man Jordan managed to get into college in some way, but he had a fearful time trying to remain there. He was given a final chance to pass an examination or be dropped from school. His father was much concerned over the matter and urged the boy to telegraph him just as soon as he found out whether he had passed or not. A few days later a telegram came. The father opened it and read: HYMN TWO FIFTY FOUR VERSE FIVE LAST TWO LINES. He looked up the reference and found: "Labor's over; sorrow ended; Jordan passed."

What we mean to say in our roundabout way is that the worries of the Imperial Valley, California, cantaloupe growers over mildew injury seem to be disappearing--labor's over, sorrow ended. Ten years ago powdery mildew threatened the destruction of the cantaloupe industry of this region--and, as you probably know, the Imperial Valley is the leading cantaloupe producing district of the United States. Plant breeders came to the rescue of the industry, however, and by 1936 half of the cantaloupe acreage was planted to a new disease-resistant type known for the present as "No. 45 Powdery Mildew Resistant Cantaloupe." The acreage for 1937 will be much increased.

The dividend paid by this mildew-resistant cantaloupe was touched upon in the News Letter of January 15, 1937, when we mentioned that Dr. G. H. Coons, Division of Sugar Plant Investigations, Bureau of Plant Industry, U. S. Department of Agriculture, in his address as retiring president of the American Phytopathological Society, discussed at Atlantic City last December the value of disease resistant plant creations.

Dr. Coons pointed out that while only a part of the 116,000 acres is planted to these disease-resistant cantaloupe varieties, the gain as a result of using them is 100 percent. The disease condition was so severe, you understand, that cropping was impossible without plants that could grow in spite of the disease. He said that disease-resistant varieties of cantaloupes account for an estimated $5,000,000 production annually that would have been impossible without their use.

Now, five million dollars represents approximately five times the cost of all the investigations of our Division, and to get this dividend from a single piece of work is startling and I would have enlarged on it for a few thousand words or so if I had realized how much of a finger we have had in the work. The late Dr. J. T. Rosa of the University of California started this mildew work, and the resistant seed used in inaugurating the experiments was purchased in India by the California Agricultural Experiment Station. But Dr. Ivan C. Jagger joined with Dr. Rosa in this work--a cooperative undertaking--and along with Mr. G. W. Scott, research assistant in truck crops at the Davis branch of the California station, since Dr. Rosa's death in 1928, has given us a beautiful illustration of the superiority of applied genetics over the old trial and error method of plant breeding.

The work was started in 1926, but it was not until 1928 that the wide range of muskmelon varieties, secured from many parts of the world by the Department's Division of Plant Exploration and Introduction, showed anything of noteworthy promise in the tests. That year a number of the plants of mixed varieties remained entirely free from mildew.

Success was not yet at hand, however, for these resistant varieties proved to be commercially worthless. Rosa and Jagger had found indications, however, that mildew resistance is inherited as a simple Mendelian dominant factor, thus making practicable backcrossing the hybrids with American varieties, a procedure that has apparently hastened the development of strains combining the resistance of the Indian varieties and the desirable shipping and eating qualities of the American commercial sorts.

"Powdery mildew resistant cantaloupe No. 45" is the result. It is generally entirely free from mildew in the Imperial Valley. In the coastal districts of California, where conditions are particularly favorable for powdery mildew it usually shows some mildew late in the season, but the crop is not appreciably injured.

It is much like the Hale Best cantaloupe, though maturing somewhat later. The flesh is even firmer in texture, a characteristic that promises to make it a superior shipping melon in districts adapted to its production. In edible qualities it compares favorable with the leading commercial sorts.

And then, too, there is the matter of the $5,000,000.

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASES INVESTIGATIONS.

Packages--and Precooling. A farmer, visiting his son's college, was much interested in the work of the chemistry class. He was told that the students were looking for a universal solvent. He wanted to know what a universal solvent was. "Why," he was told, "it is a liquid that will dissolve anything." The old farmer looked impressed. "That's a great idea," he admitted, "but when you find it, what are you going to keep it in?"

A container for the universal solvent offers an interesting problem, of course, but what impressed me about this anecdote is that the old farmer hit upon the same idea that struck our colleague E. D. Mallison in connection with his studies of precooling and precooling methods--the importance of the package or container.

As Mallison and Hukill pointed out a year or so ago in a paper in the New York Packer, while a large amount of money and much effort have been expended in the development of precooling systems of various designs to precool fruit and vegetables in the refrigerator car, very little attention has been given to the package and its effect on the rapid cooling of the contents.

The rapid removal of field heat from fruits and vegetables shortly after harvest, commonly known as precooling, has long been recognized, of course. It is an important factor in giving longer storage life to the commodity, permits the picking of more mature fruit than would otherwise be possible, and increases the distance that the commodity can be safely shipped. In his studies on the precooling of peaches, Mallison has gone ahead to design a package that is proving to be just what the doctor ordered--peaches packed in it cooled off three times faster than those packed in the ordinary containers.

The new type basket is slatted or spaced for ventilation. A crown-shaped lid, also of open construction, allows air to pass through. Instead of a solid cushion between the lid and the fruit, Mallison devised a ring type, ventilated pad with a circular hole in the center. A slotted paper liner completes the ventilated basket. The new container was given numerous practical field tests last year and found extremely satisfactory. It is now being manufactured by commercial concerns and its use will spread rapidly, it is believed.

Without precooling, peaches must be harvested while still hard if they are to remain firm in transit, and thus flavor is sacrificed for appearance. Properly packing plus cooling means that it will be possible to pick more mature fruit, that the distance it may be shipped safely will be increased--and that the consumer will get a better product, in effect tree-ripened peaches.

DECIDUOUS FRUIT INVESTIGATIONS

C. O. Hesse, Davis, Calif.

Writing for the week ending February 27th, he says: "The collection of plumcot bud material has continued through this week, but is nearing an end, only one or two varieties still showing pollen mother cells.

"With continued warm weather the apricot and plum buds are advancing rapidly, but apparently the warm weather had led us to believe them nearer to blooming than is actually the case. While two of the earliest are in full bloom and a third just starting, it will be another week or ten days before the bulk of the earlier blooming varieties are in bloom.

"A rather unusual condition prevailing this year, at least at Davis, is that the almonds are little if any ahead of the apricots. Apparently the well broken rest, and the continued cold weather suddenly turning warm has given them all an equal start.

"Friday, February 26, Dr. King and I went to Vacaville where we collected between 35 and 40 pomegranate varieties, which will form the nucleus of a variety collection of this fruit at Winters. Cuttings will be made and grown in the greenhouse here at Davis this year.

"Mr. Shamel referred to Dr. Tufts a case of a self-sterile peach. Early Paloro, which is growing in an orchard at Merced, Calif. Laboratory investigation of the flowers shows it to be a scant pollen producer, although some good pollen was found.

ADMINISTRATIVE NOTES

Books On the record of books charged to the Division from the Department Library are the following which cannot be located. If you have ANY of these books, please let Mr. Gillette know in order that our records may be corrected to show the present location of the volumes.

Bayley, C. R. Photography Made Easy. 2d ed.
Chupp, C. Manual of Vegetable-Garden Diseases. 1925
Haas, P., and Hill, T. G. Chemistry of Plant Products. 1921. 2 volumes.
Maerz and Paul. Dictionary of Color.
Owens, C. E. Principles of Plant Pathology. 1928.
Sutton, F. Volumetric Analysis. 1924.

DECIDUOUS FRUIT INVESTIGATIONS

M. A. Smith, Columbia, Mo.

Writing from the Ozarks Fruit Disease Laboratory on March 15th, he says: "A survey was made of the peach section of Mountain Grove and vicinity on March 4 and 5. A count was made of live peach fruit buds at the Mountain Grove Fruit Experiment Station. Prospects for a peach crop so far appear good if the following figures are any indication:

Variety	No. of Buds Counted	Percent alive
Elberta	120	30
Champion	112	24
Alton	88	84
Krummel	105	37
Frank	96	75
McGraw	85	63

"Most apple varieties in the southwestern part of the State are carrying a good supply of fruit buds."

R. B. Wilcox, Pemberton, N. J.

"As the season advances toward spring the weather becomes more wintry," he reports for the March 1-15 period. "During this period there have been two falls of snow, aggregating more than six inches, and the average temperature has been moderately low. This has prevented any premature starting of blueberry buds, and is apparently putting the plants into good shape to begin normal growth in the spring. Blueberry pruning, however, is disclosing in some fields a considerable amount of dead or weak wood, most of which was undoubtedly due to the unfavorable weather conditions (temperature and moisture) of last summer."

He had written February 28th: "We have been trying to bring up to date our record of the production of individual varieties of cranberries, to extend the graphs which we published five years ago. We find it becoming harder each year to get accurate figures of production, due principally to two factors--the trend toward hauling by truck instead of shipping by rail, which complicates the record of total production; and the growth of the cranberry-canning industry, which makes it very hard to get figures on individual varieties. The figures of the two principal cooperative marketing companies are very accurate, but neither one would be representative of the industry as a whole, and their policies are not alike as to the selling of members' berries to canning factories. The records are of importance, and we believe that we will, in time, secure fairly accurate information."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"We are favored with a visit by Mr. F. E. Staebner, associate drainage engineer of the Bureau of Agricultural Engineering, who was in Albany, in regard to problems associated with the irrigation of pecans," he writes March 6th from the U. S. Pecan Field Station and Laboratory. "Mr. Staebner led the discussion on Wednesday morning in a meeting with a small number of growers. Considerable interest was in evidence at that meeting as to the possibilities of irrigating pecans, but no definite action was taken and it is somewhat doubtful if any will be taken in the near future as the economic feasibility of irrigation was questioned. However, some good reasons were mentioned for working on the problem from an experimental standpoint. Mr. Staebner spent the remainder of his visit with members of the local station staff in trips to various orchards around Albany, keeping mind the possibility of using certain blocks of trees in irrigation experiments. No definite plan of action was evolved.

"Two freezes which occurred during the week added to the damage already done to peaches in this section. One grower estimates he will have but one-fourth of a crop. Other plants which were much advanced for this season of the year were more or less seriously injured. Only a very little rain occurred and the days were almost all bright and sunny."

He had written February 27th that the meetings of the Southeastern Pecan Grower's Association at Fitzgerald, Ga. Feb. 24-25 were well attended. Of nine papers presented, three were by Bureau of Plant Industry workers, three by men employed by the States of Georgia and Florida, and three by growers or distributors. "It is probable that most interest was centered on spraying for the control of peach scab," he says, "but all papers presented brought forth a considerable amount of discussion."

Asparagus Sprouts. There was an interesting aside at the meeting-- the Editor, not Dr. Hardy is speaking now--and while there has been no call for suggested explanation, it is believed that one can be offered. During the afternoon session of the meetings on February 24, the Federal employees connected with the pecan work were introduced to the gathering--and some six or seven young and good looking men arose and bowed. Well and good. But at the banquet tendered by the city of Fitzgerald the speaker of the evening, Dr. T. H. McHatton, Head of the Department of Horticulture, University of Georgia, Athens, Ga. made a startling comparison--he likened these same men to asparagus sprouts!

Naturally there has been some perplexity, but it seems to us that Dr. Mc Hatton was merely implying, in his tactful way, that these young men should not rest upon their laurels, but should continue to be up and doing. The asparagus comparison offers the incentive, for it is pretty generally known that a good many of the very best asparagus sprouts are eventually canned!

NUT INVESTIGATIONS

Max B. Hardy (continued)

"The station was visited March 10th by Mr. L. M. Ware, Dr. J. L. Seal, and Mr. H. S. Swingle of the Alabama Polytechnic Institute, Auburn, Ala." he writes March 13th. "They came to learn of our recommendations regarding spraying, fertilizing and culture. Much interest was evidenced by them in the results of our experimental work and they were much impressed with the appearance of the trees in the few experimental blocks that were visited. There appears to be a continuous increase in revival of interest in pecan growing which is encouraging some expansion of work at the various State institutions.

"It may be of interest to note that planting of watermelons, corn, cotton, and peanuts has begun in South Georgia. The weather during the week was very favorable to field work as most of the days were bright and very warm. With no rainfall occurring since the last day of February, the soil is in excellent condition for working although even now it is a little on the dry side. Two frosts occurred during the past week but did little or no damage."

Milo N. Wood, Sacramento, Calif.

"Early blooming almond varieties are fully six weeks later in blossoming than was the case last year," he writes for the week ending March 6th. "Because of warm sunny weather, almond varieties have blossomed with great rapidity during the week.

"Early and late blossoming varieties are blooming closely together. It appears that the blooming of early and late varieties will overlap this year so that any variety will pollinate any other variety. Therefore, there will be little or no pollination trouble due to lack of overlapping of the blooming of varieties, even in orchards where the interplanting for pollination purposes is faulty in most seasons. The fine weather during the week has been favorable for bees and other insects to work on the blossoms and pollination of the almond should be very successful from a commercial standpoint. If other factors remain favorable, a heavy crop of almonds may be expected.

"Almond varieties seem to be blooming quite close together in the different districts. The Bay region and most parts of Contra Costa County are a few days ahead of the Chico district in the northern part of the Sacramento Valley. However, there is very little difference in the blooming of varieties in the different districts this year. Because all varieties are blooming at the same time, the landscape is rather striking and one can get a good idea of the extensive acreage in almonds because the orchards in bloom can be seen from considerable distances...."

INGENIOUS IDEAS CUT EXPENSES IN RIGGING IRRIGATION SYSTEMS

Mr. Staebner's visit to Albany and vicinity reminds us that the Press Service sometime ago quoted hints from his records that may be helpful to some of our workers. The release pointed out that success with supplementary irrigation often depends on the natural ingenuity of a good farmer, because almost every farm presents an individual problem and because a lack of ready cash may make it necessary to assemble equipment from inexpensive odds and ends. Thus ingenuity is one of the biggest assets of the fruit or truck farmer who irrigates to supplement rainfall in the humid States.

The records of Dr. Staebner reveal many inegnious systems used by farmers who have found them profitable and are extending them to irrigate more acres. There is, for example, the strawberry grower near Benton Harbor, Mich., who has a homemade spray system on wheels that he rolls back and forth across his fields. Several hundred feet of 2-inch pipe, with 1/8-inch holes bored every two to three feet, carry the water and furnish the spray. The pipe also forms the axle for the wheels that carry it, these wheels being discarded automobile tires with an X-shaped framework of waste lumber for support. The pipe or axle runs through a hole in the center of the wooden frame and connects to the water supply pipe and flexible joints, although a rubber hose might be simpler and more convenient. This farmer's crop from 1-1/2 acres in 1936 sold for more than $1100.00.

"Another farmer near Benton Harbor uses old boiler tubes from railway steam engines for piping water to his truck crops. The tubes are 5-1/2 inches in diameter and cost about $15.00 a ton. For permanent installation the ends are trimmed off and the tubes welded together. For temporary installation joints made of old inner tubes are used on these and smaller pipes. One end of a section of inner tube, a foot to 18 inches long, is first rolled up (in much the same manner that a man rolls up his sleeves) and then unrolled over the end of one pipe. Another pipe is connected in the same way. These joints are wrapped with cord and covered with paint or pitch.

"Many farmers use old automobile engines to run their pumps. A good example is found on a farm near Cranberry, N. J. The pulley wheel is attached direct to the drive shaft which has been shortened and placed in a bearing bolted to both sides of the chassis. The motor can be used in all gears, including reverse, and the storage battery furnishes power for starting and lights for night work....Oftentimes a farmer in irrigating has difficulty in keeping the belt on pulley wheels because the motor and pump are not lined up properly, or get out of line. A farmer in Colma, Mich. anchors his pump by chain to a post so that it can be swung into line easily by a slight shifting of the pipe which lies in the stream or other source of supply."

NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"Nursery stock sales in filberts have been progressing very rapidly," he writes March 13th. "The whole stock was practically sold at one time, but one heavy cancellation for some 200 acres has thrown that stock back on the market.

"The pollination season for the filberts is over with.

"We were out one afternoon checking cover crops. At the present time the old standard of barley and vetch seems to be just about as satisfactory as anything we have put out. The winter was very severe on the winter hardy crimson clover and also on the turnips."

J. R. Cole, Albany, Ga.

"The March issue of the Progressive Farmer gave our spray schedule for scab control," he writes from the U. S. Pecan Disease Field Laboratory on March 6th. "We have been swamped with requests since then, and on one day alone we sent out 19 pamphlets giving our specific recommendations. The requests ranged from South Carolina to Texas. We have also had a number of visitors. Some of them were particularly interested in purchasing spray machinery and came to see our machine. I sincerely regret that we do not have a modern machine, streamlined and everything, to show these growers.

"The cold weather has continued with 'white frosts' almost daily. The peach crop was the most important crop to suffer and as yet we do not know the extent of damage in this vicinity."

HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"Another nice snow descended on the station the night of the 18th. Thunder, lightning and rain followed by sleet and snow at 5:15 p.m. and continuing through the night resulted in about 10 inches of wet snow the best of the season, as it laid nicely on the flat lands of the station, with a few small drifts about buildings and in the shelterbelt. The one-horse plow cleared the walks on the 19th.

"Completed seeding tomato varieties in greenhouse flats. Packaging vegetable seeds to be sent to cooperators. Mr. M. F. Babb attended meetings of the Nebraska Certified Potato Growers at Scottsbluff, Nebr. the 16th and 17th.

"The first shipment of shelterbelt trees went forward during the week to six cooperators in western Kansas. Mr. Andrew Krofchek left to inspect shelterbelt sites near Powell, Wyo., on the 18th, taking several bundles of trees in the station truck."

ADMINISTRATIVE NOTES

Appointments of Field workers. Even if you can't pronounce filet Mignon, you can always order a hot dog, but when you want an appointment made in a hurry you are up against a good bit more difficult proposition because so far we have been unable to find a substitute for time in handling your requests.

Why bring that up? Because now that Spring is here we know that our field men are rushing ahead with their activities--and quite likely discovering that more help will be needed here and there, not only immediately but at once. Of course, temporary labor may be employed under your letter of authorization--after you make sure that the letter really contains that authority--but the Bureau's accounting officers are emphasizing the desirability of keeping employment under letters of authorization to the minimum--or lower!

Whenever practicable, therefore, laborers and other workers must be given regular appointments. As you know, such appointments may be made on a wae (when actually employed) basis to cover employment by the day or even by the hour, so that you need use and pay the worker only for the time he actually puts in. Such appointments give you the same freedom to employ the workers when actually needed that you have under letter of authorization employment.

Requests for appointments should be sent to us promptly. Where at all possible it is important that they reach Washington, D. C. at least two weeks before the effective date of the appointment. In this connection, please keep in mind that the employee's full first name must be given on the request for appointment--and on all payrolls. Of course, if he habitually uses the initial of his first name and full second name, this is satisfactory, but either the full first name or the full second name must be given--John L. Jones or J. Louis Jones, for example. And don't forget that we must know in requesting an appointment whether the prospective employee has any immediate relatives in the Federal Service. If he has, give us full particulars.

Transportation of Materials. The Motor Carrier Act of 1935 specifies definite requirements for interstate trucking companies before we can employ them for transferring materials. For instance, in all cases where employees are changing headquarters and transfer personal and official effects, bids for such transfers must include special clauses and forms to be filled out by the trucking company. It is very necessary therefore, that before asking for bids for such transfers of materials and effects our Business Office be asked concerning the latest requirements and wording of such bids.

ADMINISTRATIVE NOTES

Monthly Financial Statements

All through the game an enthusiastic spectator had been cheering loudly, urging his team on to victory. Finally he became hoarse from shouting and turning to a friend sitting beside him in the stand said, "Gosh, I've shouted so much I've lost my voice." "Don't worry about that," consoled his friend. "You'll find it in my left ear."

Please look into your left ear and see if you can find Roy Gillette's voice, urging you to send expense accounts and other vouchers to us promptly after the close of each month, so that the figures may be shown on your current monthly financial statement.

Naturally you want your monthly financial statement to be as nearly up to date as possible. If it is to be, we must have your cooperation. For several months past vouchers have been rolling into the Business Office quite promptly after the close of each month--but there are a few employees who have been growing lax in sending in these vouchers with the result that the accounts reach us too late to be included in the current monthly statement. Please remember, for example, that if a voucher covering expenditures during April is mailed so late that it does not reach us until after May 10, it will not appear on your monthly statement until June 10. This is not only very undesirable, but may cause serious trouble, especially near the close of the fiscal year, sometimes leading you to exceed your allotment. That hurts--you and us. Please, then, make a very special effort to get all vouchers to us as promptly as possible after the close of each month.

The Business Office also asks that you handle public service vouchers (gas, electricity, etc.) promptly. Quite frequently such vouchers get here on the very last day the cash discount is effective--and, of course, too late to permit us to have check mailed in time to claim the discount. You are especially urged to see that all vouchers including cash discounts reach us in ample time to permit auditing, recording, and mailing of the check before the discount time limit is reached.

HANDLE CORRESPONDENCE PROMPTLY !

"The handling of correspondence is one of the most important parts of our work," says the Secretary in a memorandum to Chiefs of Bureaus and Offices. "To a large extent letters take the place of personal contacts; they express the personality of the Department. We want our correspondents to know that their communications to us receive careful and prompt attention."

Make every effort to reply promptly to all letters referred to you. If there must be some delay in assembling the information requested, acknowledge the letter at once, promising a more detailed reply later.

ADMINISTRATIVE NOTES

Travel We regret to report that a number of our employees have made the somewhat expensive mistake of overlooking the article on page 205 of the September 1, 1936 issue of the News Letter, pointing out that transportation requests must be made out to show exactly the class of transportation used--coach, Pullman, etc. If you are going from Washington, D. C. to Boston, Mass., for example, and travel in a sleeper to New York City and in a coach from New York City to Boston, the transportation request must show: "Pullman, Washington to New York City; coach, New York to Boston."

The September 1 article gave in full the text of a memorandum from the Office of Budget and Finance and in case you have mislaid it, we will repeat the pertinent facts: Employees are allowed first class accommodations on trains when in a travel status. This includes standard lower berth for each person or a seat in a sleeping, parlor or chair car if the journey is more than 25 miles. For journeys of 25 miles or less, employees must use coach service if it is available. If coach service is not available then the travel account must show why it couldn't be used. The main point of the article, however, is that you must show definitely on the transportation request the type of service actually furnished.

Paragraph 21 of the Standardized Government Travel Regulations provides that in preparing transportation requests "The date, place at which request is issued, the name of the carrier or company on which drawn, point of departure, destination, complete route, showing initials of carriers, and junction points when necessary, class of ticket, whether first-class, limited, roundtrip, party, or other special class, must be inserted."

On the face of the transportation request form a block is provided wherein the class of service requested and received is to be indicated. If first-class ticket is obtained in exchange for the transportation request the word "first" should be inserted in this space; but if the ticket obtained is at the lower rate entitling the traveler only to coach accommodation, the word "coach" should be inserted, instead. In some cases of course a traveler finds first-class service available for only a portion of the trip, with coach service at other points. Such service is known as "mixed" and the word "mixed" should be inserted in the class block on the front of the transportation request and the traveler should note on the back of the request precisely the class of service furnished between points, etc. so that when the railroad's bill is presented the auditors will be able to check the correctness of the charge made. The auditors are checking accounts very closely on these points and it is decidedly important that employees be careful to make clear exactly the service received.

And that reminds us to again request that you forward carbon copies of transportation requests as soon as they are issued. This is important.

ADMINISTRATIVE NOTES

Injuries to Employees. The Federal Employees' Compensation Act applies to all civil employees, whether temporary or permanent, of the United States Government and provides for free medical and hospital service for any employee injured in the performance of his official duties, as well as compensation in case of partial or total disability. As we have previously urged, it is of the utmost importance that section leaders and official supervisors as well as all field men familiarize themselves with the regulations governing procedure in cases of injury, in order that the interests of the injured employee may be protected. An outline of the proper procedure has been mailed to all offices on various occasions, but if you do not have one available now, Mr. Gillette will gladly furnish one upon request.

Government employees should be educated to the need for proper first aid and encouraged to report for examination and treatment of all injuries sustained in the performance of official duty, even though the injury may be so slight that the injured employee has no intention of making a claim therefor, because of the possibility later on of not being able to prove its occurrence or to establish a right to compensation should there be a recurrence of the trouble or disability from the injury.

When an injury is sustained, the employee should immediately be sent to a Public Health Relief Station or contract hospital, or a designated physician of the Federal Employees' Compensation Commission, for examination and treatment. The official superior's responsibility does not end until a designated medical officer has assumed supervision of the case. In localities where there are neither Government hospitals nor dispensaries, nor designated physicians, the injured employee or his official superior should arrange for treatment by the nearest available competent physician licensed to practice medicine and surgery. In all cases of injury where the emergency is such as to require it, any physician licensed to practice medicine and surgery under the State law may be called for first-aid treatment, but further treatment, if required, must be obtained from a United States medical officer or hospital, if available; otherwise, from a designated physician, if there is one in the vicinity.

Provided an injured employee has received proper notice of the medical and hospital treatment which is at his service in case of injury, any other medical service which he may secure will be at his own expense. An employee may refuse the medical or hospital treatment provided, but when he does so other medical treatment will not be paid for by the Commission.

The Commission does not discriminate between aliens and citizens, and employees of the United States injured in the performance of their official duties while outside the United States are also entitled to the full benefits of the compensation law.

Vol. 9 No. 7 April 1, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., April 15, 1937 No. 8

Market Diseases of Stone Fruits

"Market Diseases of Fruits and Vegetables: Peaches, Plums, Cherries and other Stone Fruits," by Dean H. Rose, D. F. Fisher, Charles Brooks and C. O. Bratley, has just been issued as Miscellaneous Publication No. 228. This is the fourth in a series of publications on the market diseases of fruits and vegetables, an extension and elaboration (with colored plates) of the old multigraphed "Handbook of Diseases of Fruits Under Market, Storage and Transit Conditions," prepared some years ago by Dr. Rose and the late O. F. Burger.

The colored plates in this new bulletin are reproduced from water-color paintings by L. C. C. Krieger, R. C. Steadman, Mary D. Arnold and J. Marion Shull of our staff, under the direction of Dr. Rose; and from colored photographs prepared through the collaboration of Webster Brothers of Chicago, under the direction of the authors.

Because of the colored plates and the resulting expense for printing the bulletin, only a very small edition could be secured for free distribution and these copies are being sent to officials in Federal and State institutions who are in charge of lines of work directly related to the subject covered. The Superintendent of Documents, Government Printing Office, Washington, D. C., has ordered an edition of 1,000 copies to be sold approximately at cost--20 cents a copy--coin (at sender's risk) or postal money order made payable to him. He will also have the colored illustrations in poster form, on cardboard 7-1/4x12 inches, at five cents each. It is believed that these bulletins and posters will be of decided help in determining the causes of losses in shipments of fruits and vegetables--and in placing the responsibility for such losses.

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASES INVESTIGATIONS

Citrus Fruits in Gulf States

"Harvesting and Handling Citrus Fruits in the Gulf States," by J. R. Winston, has been issued as Farmers' Bulletin 1736, superseding the old Farmers' Bulletin No. 696, "Handling and Shipping Citrus Fruits from the Gulf States." This new publication of 37 pages with its 20 excellent illustrations, points out the principal factors governing the merchantable condition of citrus fruit in the Gulf States, and the relationship between harvesting and handling methods and the maintenance of the fruit in first class condition.

The harvesting and handling of citrus fruits has become a highly specialized business, something almost apart from the growing of the fruit. From the time the crop is ready to harvest until it reaches the consumer it is for the most part entrusted to special organizations, many of them cooperatives, which supervise or assume responsibility for the picking, conditioning, packing, shipping and marketing of the fruit.

With the growth of the citrus industry, many new and improved methods of handling the fruit have been developed, including superior methods of picking, washing, "degreening," polishing, packing and shipping. Remarkable advances in the technique of handling the fruits have been made since the beginning of the present century although--believe it or not!--some of them are actually rediscoveries of methods known and used by Chinese citrus growers hundreds of years ago. As far back as 1178 A.D. a Chinese author, Han Yen-Chih published a work (Chu Lu) on the oranges of Wen-chou that describes in detail improved methods of picking and handling just rediscovered by our investigators since the beginning of the present century!

The especially careful handling of citrus fruits now in vogue has taken hold so firmly that we find every successful packing-house operator fully aware that even after leaving the tree the fruit is still a living organism that respires and is consequently subject to suffocation; that spoilage may be increased or hastened by improper handling and storage, etc.

On the other hand, both growers and handlers are now aware that proper handling at all stages of the packing operations, together with the timely application of mild antiseptics will reduce spoilage. They alwo know that spoilage may be retarded by refrigeration. This is vitally important information, since the general appearance of the fruit is certain to have a decided influence on the price it will bring.

The new publication helps further by describing the more important fungus diseases of citrus fruits in the Gulf States.

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Golden Delicious apples from three orchards were examined at Wenatchee and Yakima," he reports for the March 22-27 period. "A pre-storage delay of 4 days at 65°F. did not predispose the fruit to soft scald to any significant degree. Seven days delay was followed with soft scald. Storage at 36° largely avoided soft scald though not to an extent which would suggest this temperature for commercial use. Very severe decay developed in the fruit from one orchard, which in previous years has produced apples showing very little decay as late as April. Both Penicillium and Botrytis were present, the former frequently being secondary to Botrytis, or to soft scald development. No box of this fruit showed less than 10 percent decay. Eighteen percent decay was found in a box stored at 32° immediately after packing. The same orchard's fruit showed the most soft scald and this was in direct contrast with its records of previous years."

DECIDUOUS FRUIT INVESTIGATIONS

C. O. Hesse, Davis, Calif.

"The apricot breeding work, begun Friday of last week, was finished the middle of this week," he writes March 13th. "From the standpoint of breeding the bloom was almost too even, the bulk of the varieties coming into nearly full bloom on Saturday and Sunday. As a result we were not able to complete as full a program for the apricots as we had hoped. However, we made about 3,700 selfs and around 3,500 crosses.

"The plum varieties are coming on more slowly, as is their habit, and because of the much cooler weather we have had the past week. This is enabling us to complete a more varied and complete program than with the apricots. We are about half through with the plums at this time, those completed belonging to the Japanese group, P. salacina or its hybrids. The bulk of European and American plums apparently will not be in bloom until the latter part of next week.... A genetic factor or factors for anther color was found in this seedling block of apricots, and notes were taken as far as time and nature of the bloom would permit. A final and complete analysis will have to wait until more complete records can be taken. Two expressions of these factors were easily recognized--the yellow, which is normal, and those lacking in yellow pigment, usually being a light grayish color. However, there were subdivisions in each of these groups which need further study.... We have placed pots around all the trees used in the breeding work, although we hope they will prove an unnecessary precaution. The Winters district had a very heavy apricot bloom this year, probably being as near 100 percent bloom as would ever be found commercially. The prospects are for a heavy thinning bill for the growers unless Mother Nature takes a hand--as she has so often done in the past."

DECIDUOUS FRUIT INVESTIGATIONS

W. W. Aldrich, Medford, Oreg.

"With the falling of Anjou bud-scales we made the counts of total fruit-buds per tree at the time when counting could be done most rapidly," he writes from the U. S. Pear Field Station on March 29th.

"Grim, Griffin and I counted 51 trees in 54 man-hours. Mud underfoot and frequent showers made the job more unpleasant than usual. Medium-pruned trees averaged about 6,000 fruit-buds per tree (after 1937 dormant pruning), or about 5 percent less than in 1936. Previous soil moisture conditions had very little effect upon the number of fruit-buds per tree. Heavy-pruned trees averaged about 3,000 fruit-buds per tree (after 1937 pruning). If, as in the past, the heavy pruning results in about twice the percentage of blossoms setting fruit, heavy-pruned trees will have about the same number of fruits per tree as medium-pruned trees. These data seem to have very little significance, and apparently must be placed in the category of routine observations.

"In counting the fruit buds on unpruned trees in the low-nitrogen and high-nitrogen plots at the Stratton Orchard, we were surprised to find 57 percent less fruit-buds than in 1936 for low-nitrogen trees and only 15 percent less for high nitrogen trees. It would seem that now-nitrogen trees had reached the growth condition similar to Kraus and Kraybill's C/N ratio IV, in which carbohydrates are very high and nitrogen too low for optimum fruiting. It will be interesting to learn whether our 1937 heavy pruning of the low-nitrogen trees is more effective in increasing sets of fruit than our similar heavy pruning of the high-nitrogen trees.

"It is noteworthy, but not surprising, that the only good stands of grain or vetch cover crops in the Valley are in orchards where a fall irrigation was applied after seeding."

He had written March 22d: "In our report of June 8, 1936, we commented that the 16 days of low evaporating power of the air between 50 and 66 days after full bloom in the spring of 1936 probably would mean a lack of water deficiency in the trees during a period when fruit-bud differentiation might be influenced, which would probably result in less fruit-bud differentiation than normal.

"Now it is apparent that Anjou, which usually has fruit-buds on most of its spurs, has less fruit-buds on spurs than in any of the previous five years. Comice on light soil which bore a moderate crop last year, are nearly devoid of fruit-buds this spring. On heavy soil, where we believe slight water deficits occur on all summer days without rain, Comice has only a light scattering of fruit-buds. Bosc, with a moderate crop last year, has a fair amount of buds this spring. Bartlett has fewer fruit-buds than usual. Apparently our prediction was justified."

DECIDUOUS FRUIT INVESTIGATIONS

Ozarks Side-Winder

I am afraid I have been underestimating the difficulties with which our colleague Dr. M. A. Smith, has to contend at the Ozarks Fruit Disease Laboratory. This thought is occasioned by the receipt of a newspaper clipping.

"It's pretty hilly in the Ozarks," says the newspaper item," and we plow the four sides as well as the top of every field. No ordinary horse or mule could plow our solid rock fields. We use an animal called the side-hill-winder. It grows wild in these parts. The animal looks like a cross between a mule and an antelope, and the only place it can live is on the side of a steep hill, because the Ozarks side-hill-winder has the two legs on one side of its body a foot longer than those on the other side. This gives the animal an unusual grip on the side of a hill and makes the side-hill-winder far superior to mules for plowing rock.

"But the side-hill winder is a stupid critter," the accounts relates. "If one accidentally gets turned around so that its short legs are on the down side of a hill, it falls over and lies there until it starves to death. That's why Ozarks mountain families are so large. The children are needed to search the hills for baby side-hill-winders that have fallen with their short legs on the down side. The children turn them around so that they can stand up again. Otherwise, of course, the side-hill-winder species would all die off, which would be just too bad."

John H. Weinberger, Fort Valley, Ga.

"The freeze of March 16, while not causing as much actual damage as the two previous freezes, had a more disastrous effect on crop prospects because so few live buds remained. According to reliable reports and personal observations, some Hiley and Elberta orchards in central Georgia have been injured so severely that it is questionable whether spraying will be profitable. Other orchards may have an almost full crop. In this section and further south, one-third to one-half of a crop on these varieties appears to be the best possible prognostication. Uneeda trees near Fort Valley are now in full bloom and have suffered the least of any varieties," he writes on March 22. "Early Rose, Carman, Red Bird, and Mayflower are in the pink stage. Some orchards of these varieties appear to have an abundance of bloom, and may come through with a full crop in spite of delayed dormancy troubles.

"Reports from Cornelia, in north Georgia, have 50 to 75 percent of the remaining live buds in that section killed in the last freeze, the temperature dropping to 20°F with the trees in bloom. That section, of course, is still subject to frost damage. It appears that no section of the State has been completely killed out, but that the peach crop in Georgia this year will be light, the most optimistic estimate being one-half a crop. It cannot be predicted with any degree of accuracy as yet, however."

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, Amherst, Mass.

"Last Monday morning I went down to East Wareham and remained there during the week," he writes April 3d. "The trip was made in order to attend a conference with cranberry growers to discuss cold storage and partly to confer with the chemist of one of the canneries on methods of carbohydrate analysis.

"The conference for discussion of cold storage was called by some of the men from the Massachusetts State College who are working on cold storage of cranberries, in order to present results of last year's work to growers and to plan experiments for the coming season. The Director of the Experiment Station of the College and two other men from the College were present and about half a dozen of the more important growers. The growers are showing a very great interest in cold storage. Tenative plans have been made for storage tests for the coming season and will be developed in time to start tests as soon as the picking season begins....

"The winter flood was taken off from a number of cranberry bogs during the past week. There was a very heavy growth of algae on many of the bogs (slime as the growers call it). Ordinarily algae do not make much of a growth until April so that unless the water is held until May it would not be expected to develop much. This year due to the very mild weather of January and February it was able to grow luxuriously at that time so that the vines are often heavily covered when the water is let off. It will probably be necessary to treat other bogs with copper sulfate before the water is withdrawn in order to kill the algae."

John C. Dunegan, Fayetteville, Ark.

"Apparently the period of low temperatures did not cause the damage to the peach blossoms that was anticipated," he writes April 3d. "I have examined a number of trees, have talked with various growers, and the general opinion is that the peach blossoms were not seriously injured. The growers feel that in spite of the reduction of the size of the crop during the winter, most of the trees in northwest Arkansas will have a good crop....

"The last half of the week in northwest Arkansas has been very mild and apple buds are advancing rapidly. If the warm weather continues the coming week the spraying operations will either be started the end of the week or the early part of the following week."

He had reported earlier that fully expanded apothecia of Sclerotinia fructicola were observed on March 23d.

DECIDUOUS FRUIT INVESTIGATIONS

N. H. Loomis, Meridian, Miss.

Reporting on small fruit investigations at the U. S. Horticultural Field Station, he writes on March 20th: "It is interesting to note that on grape vines pruned about the 15th of January, one or two leaves are now unfolded, while on the same variety that was pruned one month later, buds are just beginning to swell.... There will be almost no pears in this section this year. An examination of the peach trees in one commercial orchard showed practically all the blossoms had opened and shed and no fruit has set at this time. During the first part of the week there was another light freeze which killed all of the open strawberry blossoms and destroyed the fruits that were already set. The strawberries had been blossoming since the latter part of January. Some entire flower clusters have been killed by the freezes. There are still a good many flowers yet to open but the crop may be somewhat reduced by the freezes."

George F. Waldo, Corvallis, Oreg.

"Intermittent rains during the week have kept the ground too wet for planting. Temperatures, however, have been rather warm and new growth is starting," he writes March 20th. "The prospects so far are favorable for good crops of all small fruits. The winter injured the young strawberry runner plants considerably, making planting stock very scarce. Growers of certified Marshall strawberry plants are all sold out and considerable interest is also being taken in the Redheart.

"A trip was made Monday to the planting of Mr. Carter Smith of Colton, Oreg. who has a million Redheart strawberry plants for sale. He was at that time preparing for some 400,000 plants. He informed us that about 500 acres were being planted that he knew of. Packers of strawberries are offering 9 and 10 cents. These are the highest prices which have been offered since before the depression years, and probably account to some extent for the increased demand for strawberry plants."

R. B. Wilcox, Pemberton, N. J.

"There has been little ice on cranberry bogs during the past winter, and the temperature of the flood water has been exceptionally high. This has resulted in a heavier growth of algae in the water than is usual at this time of year--March 31st. A few growers have removed their winter flowage for 48 hours in order to check this growth, and one grower went so far as to apply a spray of copper sulphate directly to the algal layer before replacing the water. We shall watch the results with interest. A number of growers have sprayed strong solutions of copper sulphate into the bog flowage and others have applied it in various ways. This algal growth is of considerable importance on New Jersey bogs for it often becomes so heavy as to form an impervious layer when the water is removed, retarding the growth of the cranberries until the layer is forcibly broken up."

CONTROL OF LEAF SPOT AND LEAF SCORCH OF STRAWBERRIES

"Leaf spot and leaf scorch are the two most serious foliage diseases of strawberries," G. A. Meckstroth told extension workers, strawberry growers and marketing agents at meetings in Columbus County, North Carolina, the middle of January.

For the past few seasons many complaints have been received from North Carolina growers concerning the serious losses from leaf spot, especially in 1935 and 1936 when weather conditions were ideal for the development of this disease. Bordeaux mixture (4-4-50) has been recommended for years for the control of leaf spot and scorch, and tests carried on by the North Carolina Agricultural Experiment Station at Chadbourn, N.C. some years ago showed that spraying will effectively control scorch. In Louisiana spraying for leaf spot has become a general practice. In the southern part of the strawberry section practically all growers spray each year, beginning the first or second week in January and making about six applications at intervals of ten days, which gives almost complete control.

"Very promising results have been obtained in one spraying test conducted at the Coastal Plain Station during the past season," said Mr. Meckstroth. "Four applications of 4-4-50 bordeaux were made on dates as follows: March 19, 28; April 4, 17. Eleven pickings were made. The total yield for the sprayed row was 134.75 quarts as compared with 102.45 quarts for the row not sprayed. Figured on an acre basis this amounts to about 109 crates per acre from the sprayed and 83 from the unsprayed. The difference in the amount of leaf spot on the two rows was very striking; the young leaves on the sprayed row remained fairly free of disease throughout the picking season.

"Another important difference between the two rows was the condition of the calyx or 'cap.' On the sprayed row the caps were green and healthy, while on the unsprayed row many had turned brown and dried up. Dead caps give the fruit an unattractive appearance, with reduced market value. Three quarts of fruit from each row were taken to the laboratory on each picking date and each berry examined as to the condition of the cap. These studies show that for the entire season 27.7 percent of the caps were free of disease in the sprayed row as compared with 4.6 percent in the unsprayed row. For the first few pickings 48 percent of the caps were healthy in the sprayed row compared with 5 percent in the unsprayed."

Too, these studies showed almost complete control of 'black-seed' by spraying. In this trouble seed and tissue immediately surrounding it turn black and when cut open the tissue underneath is found to be discolored. For the entire season 9.4 percent of the berries showed 'black-seed' trouble in the unsprayed row as compared with .6 percent in the sprayed.

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

J. M. Lutz (Fruit and vegetable storage and utilization investigations)

"During the week some studies on suitability of various varieties of sweetpotatoes on the quality of sweetpotato chips were made," he reports February 27th. "Also, the influence of storage conditions on the quality of chips was determined. The method used was that of Dr. Brunstetter which he describes in his Public Service Patent No. 2,056,884. The potatoes stored in the sweetpotato house produced a better quality of chip than those subjected to unheated shed storage conditions.

"Flavor seemed to be correlated with the characteristic variety color of the sweetpotato. Thus Porto Rico, which is considered by the Southerners to have highest quality, in ordinary methods of cooking, has a rich golden yellow color and seemed to produce the highest quality chip. Nancy Hall which is somewhat lighter in color, makes a chip that is somewhat lighter in color and its flavor was not quite equal to that of the Porto Rico. The Triumph, which is used largely in starch manufacture, is a white potato and produced white chips of the lowest quality, although even these were quite satisfactory. The quality of the latter was improved by heating 15 to 25 minutes at 175°F.

March 20th he wrote: "Cutting of our canned Kieffer pears was made this week. The results which were similar to those previously reported for fresh fruit are briefly as follows:

"1. Ripening at 60° F. resulted in fruit of much superior texture and a flavor than fruit ripened at higher temperatures.

"2. Optimum maturity (on the tree) seems to be when maximum yield can be obtained; in other words, Kieffer pears should be picked when increase in size no longer compensates for loss by dropping. Maturity seems to influence quality but little.

"3. Ripening in common storage was not satisfactory in Mississippi in 1936 except very late in the season.

"4. Storage at 32° for 2 months or possibly 3 months is entirely feasible.

"5. Apparently Kieffer pears as grown in Mississippi can be made to attain higher quality than this variety grown farther north. In similar work with fruit obtained at Beltsville, Md., I was accused of selecting a poor sample of Bartlett pears when I purchased a standard commercial grade of Bartlett pears from a retail grocer for comparison, and some of the judges considered the Kieffers equal in quality to these Bartletts. This year, in order that I might not be unjustly accused of being prejudiced, I selected three of the best commercial grades of Bartletts from a retail grower and each of the nine judges graded all of the various lots of Kieffers ripened at 60° (except the lot held at 32° for too long a period) as being distinctly superior in flavor to the Bartletts and either equal to or nearly equal to the Bartlett in texture."

POTATO INVESTIGATIONS

In view of the fact that losses to potato growers from such diseases as late blight, mosaic, leafroll, spindle tuber and scab total many millions of dollars annually, it is surprising that potato breeding work including the attempt to secure disease-resistant sorts, was practically confined to three states--Maine, where our work was being conducted, Minnesota, and New York--up to the time the present form of organization of our Division was established, some eight years ago. Shortly after that, Dr. Auchter was able to bring together in Chicago a number of horticulturists representing potato-producing States, to discuss the situation and plan for the future. At this meeting the National Potato Breeding Program was adopted. Now 20 States are cooperating in the work.

For a number of years, of course, we have been carrying on under the leadership of Dr. William Stuart, Dr. F. J. Stevenson and Dr. C. F. Clark (now under the general direction of Dr. Henry A. Jones), an intensive program of potato breeding work at the U. S. Horticultural Field Station, Beltsville, Md. and (in cooperation with the Maine Agricultural Experiment Station) at Presque Isle, Me. As a part of the National Potato Breeding Program we are now engaged in (a) the production of true seed for use at Presque Isle and for distribution to cooperators: (b) distribution of single tuber selections of various progenies; (c) distribution of named and numbered seedlings for tests; (d) yield trials; (e) disease resistance tests, including resistance to mild mosaic, latent mosaic, spindle tuber, leafroll, late blight, and common scab; and (f) genetic and cytological studies. Earliness and lateness and higher market and cooking quality in relation to characters for disease resistance are given chief consideration.

Important aspects of the work at the Beltsville station are the production of seedlings and the testing of seedling progenies and parents for resistance to virus diseases; greenhouse tests for resistance to late blight and attacks of Fusarium eumartii, and in the field for resistance to F. oxysporum Schl. Other interesting problems that are just getting under way are the relationships between late blight resistance and leaf hopper injury; also the effects of certain environmental factors on the production of viable pollen and seed setting. At the Potato Field Station, Greeley, Colo., we are attacking the problems of resistance to wilt, to psyllid yellows and to common scab in relation to other characters of economic importance.

An encouraging feature of the Program has been the bringing together in effective cooperation of pathologists and plant breeders who formerly worked independently but who are now working cooperatively on the same material. Thus in our own investigations the work of Dr. E. S. Schultz in describing the virus diseases of the potato made possible the studies of the inheritance of resistance to these diseases.

AUTOMOBILES - DRIVERS' PERMITS, ETC/

From time to time we have called your attention to regulations in reference to driving Government-owned vehicles. No car or truck is to be operated on any public highway unless the operator has been furnished a driver's permit issued by the Department. Such a permit cannot be issued under the present rules unless such driver has provided himself, at his own expense, with liability insurance covering the operation of Government vehicles.

This insurance coverage can be obtained in two ways: i.e., either by having a clause added to your liability insurance policy covering your personally-owned car, or by obtaining special insurance covering the operation of official vehicles only. The latter type of insurance can be obtained at very reasonable rates through group policies issued to the Department. If interested, further information and application blanks can be furnished by Mr. Gillette.

Important. If for some reason you have let insurance lapse which covers operation of Government-owned vehicles, or if you have been issued a permit and have not provided yourself with liability insurance, your permit must be surrendered for cancellation. Mr. Allanson, Business Manager of the Bureau, has notified us that any person to whom a permit has been issued must be covered by liability insurance as of May 1, 1937, or such permits will be cancelled.

Automobile Liability Insurance. In connection with travel in Government-owned or rented automobiles used in connection with official work, we have just received Chief of Bureau Memorandum No. 939, dated March 31, 1937, reading as follows:

"Reference is made to our memorandum to Heads of Divisions dated October 13, 1936, calling attention to the following requirement in memorandum to Heads of Divisions by the Chief of Bureau dated September 12, 1935:

'It is expected that heads of Divisions will see that employees of their Divisions who do not have protection of this character be not permitted to operate Government-owned automobiles or automobiles rented for official use.'

"In a considerable number of cases, we have not as yet received information as to the insurance carried by the employees while driving Government-owned automobiles or automobiles rented for official use. It will be appreciated if you will have the permits, issued employees of your Division, checked over and this information furnished as soon as practicable. We plan to terminate permits of those not carrying insurance effective May 1, 1937.

"Your prompt consideration will be much appreciated."

ADMINISTRATIVE NOTES

Travel in Personally-Owned Autos. Quite frequently the question arises as to reimbursement for the use of personally-owned automobiles in traveling between the employee's official station and another point where official work is being conducted. The Comptroller General made a decision under date of July 9, 1936, that reimbursement could not be made for certain travel of this type. This decision raised other questions which were presented from the standpoint of the Department of Agriculture's work and a new decision has been made under date of February 15, which analyzes the former decision and clarifies the matter, so that we can now inform you as follows:

(1) In cases where an employee consistently and regularly makes trips every day or several times a week to a definite location where official work is being conducted, and which is a part of his regular duties, the same as work at his office or station, reimbursement cannot be made for such travel when performed in personally owned automobiles; and

(2) if travel similar to the above is performed infrequently and only as the occasion demands, the employee is considered in a travel status and, if his authorization permits, can be reimbursed for such travel. Each case must depend upon the particular circumstances involved to determine whether the employee may be considered in fact to be in a travel status when the travel is performed.

Vouchers Mailing slips are required to be submitted with all Form 1034 vouchers. These serve as the mailing address of the payee, being placed in "window" envelopes with the checks, which means that the address must be written so that it will show clearly through the envelope "window". This slip also requires information that will permit the dealer to know what the check is to pay. A new form of slip, Dept. Form 105, has been prepared for this use and a supply has been mailed to our employees who should throw away the old slips and begin using the new form at once.

Leave without Pay: Sundays, Holidays. The Acting Comptroller General has ruled that employees absent on leave without pay granted in advance for a definite period and who report for duty at the beginning of the duty day next following the expiration of such definite period, are entitled to compensation for the Sundays and holidays occurring between the expiration of the leave granted and the day of actual reporting for duty. If an employee should report for duty on a Monday or any other day following a holiday before the expiration date of his definitely granted period of leave without pay, he would not be entitled to pay for the Sunday or holiday. Where, however, the leave without pay is taken without obtaining appropriate authorization prior to the taking of such leave, the employee is considered in a non-pay status for the entire period of absence from duty, including Sundays and holidays, irrespective of whether they occur immediately prior to the date of his return to duty.

ADMINISTRATIVE NOTES

LEAVE

The Business Office is continually being called upon for clarification of leave regulations. Although there may be additional changes or interpretations at a later date, at the present time we are required to abide by the rulings now in effect.

The new leave regulations provided for carrying forward the accumulated annual leave from the calendar year 1935, to which was added the 26 days annual leave allowable for 1936. Any amount of this accumulated leave not used during 1935 and 1936 was carried forward as of January 1, 1937, and added to the 26 days available for the present calendar year. Annual leave cannot be accumulated for more than 60 days, so any amount of annual leave in excess of 60 days which is not taken by December 31 each year is lost.

The sick leave regulations are somewhat different than those for annual. Accumulation of sick leave did not start until the calendar year 1936, so 15 days is the maximum which could have been carried over into the present year. Any sick leave taken in 1936 would reduce the amount forwarded. Also, sick leave is only available as it is earned. 1 1/4 days are earned each month and can be accumulated to a maximum of 90 days. As an example, if an employee had taken none of his sick leave for the entire year 1936, he would carry forward on January 1, 1937, 15 days, to which would be added 1 1/4 days each month to date (January, February and March), making a total available April 1 of 18 3/4 days.

B.P.I. Memo. No. 937, issued March 15, calls attention to rules governing application for extended sick leave in excess of the amount earned. Such extended (or advance) sick leave can only be granted in cases of serious disability or ailment. Therefore, in all cases where an employee is unable to attend to his duties because of such serious disability or sickness, he must obtain from his doctor before his available sick leave is exhausted, a separate written statement setting forth the doctor's analysis of the case and his estimate of the additional time estimated for recovery, with the request that the employee be granted extended sick leave. This statement is then submitted to the Bureau officials for approval or disapproval, based upon the merits of the case. The leave slips must also be executed by the doctor for the entire period involved.

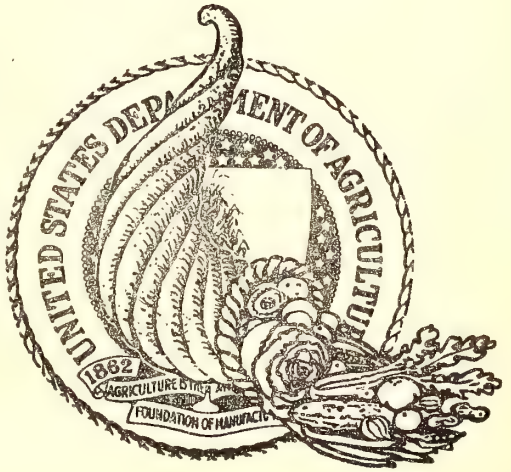
If further information is desired on the matter of leave, Mr. Gillette will be glad to go into each case and submit recommendations to the employee, based on the latest available information and the leave record of the individual.

Vol. 9 No. 8 April 15, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., May 1, 1937 No. 9

Intangible Service. Just as it is often the little extra services and courtesies that play the important part in the success of a commercial enterprise, so we believe our organization is helped in winning lasting friends and cooperators by the added service we are sometimes able to render--the intangible service that does not show up in our reports and bulletins.

I am reminded of this by a casual comment in one of the reports of our colleague, B. G. Sitton. Writing from the U. S. Pecan Field Station at Shreveport, La. on April 12th, he stated that during the week he had been visited by Mr. J. G. Richard, assistant extension horticulturist from Louisiana State University. Mr. Sitton took the visitor to the Robson station also, and he was much impressed with our work.

"The following day several demonstrations were given of the methods of grafting pecans," goes on B. G. "In all there were about 20 persons present, mostly county agricultural agents and home demonstration agents. The Extension Service of the College is planning to try to teach a few people in each Parish to graft pecans, and desired to have their agents familiar with the methods which had been worked out at this station."

That may be intangible service, but it is tangible evidence that ours is a service organization. In particular it emphasizes the fact that we endeavor to help people to help themselves--something vastly more important than merely doing things for them. Most of our work, of course, is aimed at this--the creation of more efficient tools (plants), and the devising of improved methods for the benefit of growers, handlers--and consumers.

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"Early in the season I have been of the opinion that the almond crop would be heavy," he writes April 10th. "A few days after the early blooming almonds started the weather became rainy and windy and there was not much of a chance for bees to work except for short intervals. It would seem that where the rains have been heavy and prolonged, followed by windy weather, yields may be very light.

"Furthermore, the weather has been very favorable to disease organisms, especially to brown rot and green rot. Both of these diseases appear to be quite bad upon the Ne Plus Ultra variety. Some of the Jordan trees are so badly affected by brown rot that all the leaves on the trees are curling up and dying at this time. Even in some of the sprayed orchards, Drake trees and others are suffering considerably. It is probable that the rains prevented the full effects of the spray. It appears that the crop may be considerably reduced by these rot organisms. It is too early to tell absolutely what the drop will be from lack of pollination."

He had written March 27th: "The records taken in the breeding tract show that the numerous hybrid trees are blooming more nearly together than last year. It is also clear that we have succeeded in producing some very late blooming trees. Some of these are considerably later than the very latest of the standard varieties, such as the Reams and Sultana. Therefore, we have some late blooming material for use in our future breeding work. It remains to be seen whether any of these very late blooming trees possess desirable nuts.

"We have had rains every few days and in some cases almost daily. However, there has been enough sunshine so that the bees and insects have had a chance to work in the orchards. It seems certain that pollination will be effective and that if other conditions are favorable a big crop of almonds may be expected. Furthermore, the rains, especially those coming late in the year, will be of great benefit to the non-irrigated orchards. The ground everywhere is fully saturated with moisture and the almonds are getting a good start...."

On April 3d he wrote: "The early blooming walnuts are coming out and the indications are that they will bloom very rapidly.

"Almond trees have leaved out very rapidly in the last few days and some of the early blooming varieties now have quite sizeable nuts. The season has been favorable except that it has been very favorable for the development of brown rot and other diseases."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"Pecans are developing rather rapidly and some of the more advanced varieties and trees are showing pistillate flowers in encouraging amounts," he writes April 17th. "As yet, however, even the most advanced catkins are not sufficiently mature to shed pollen even on drying in the laboratory. Foliage is rather more yellow at the present time than we would like to see but we expect it to green up rapidly as soon as warmer weather occurs.

"During the past week the temperatures during the day have been pleasantly warm but night temperatures have been rather uniformly low although never with any threat of frost. Only one small shower occurred in the vicinity of Albany during the week...."

He had written April 10th: "An inspection trip during the week to nearby orchards showed rather widely distributed frost injury to pecans, but in no case was it very serious.

"On tung trees which were examined it was impossible to find any live terminal buds but there appeared to be no injury to the wood.

"Pecan trees are showing a rather great variation in development even in the same orchard and having received the same care. In the experimental plot in the G. M. Bacon orchard some of the Alley trees are just now pushing into growth while others are showing catkins two inches long and with vegetative growth in proportion.

"Kudzu is again starting growth after having been killed back four or five times this spring by frosts. Chestnut and persimmon trees are showing some frost injury to the new growth. On plum trees there appears to be three different sizes of fruit as a result of the periodic blossoming caused by the unusual spring weather. Some local peach growers are reporting as high as 25 percent of a crop with but little winter injury to the wood, while others are reporting no crop and considerable crown, crotch and shoot injury.

"During the week ending April 10th a total of more than five inches of rain was recorded, with most of it occurring Monday afternoon. As a result of this heavy rain so much water was standing in the streets that people attending a funeral at one of the local chapels on Broad Avenue were evacuated with the aid of a boat equipped with outboard motor.

"Temperatures were somewhat below normal, but no frosts occurred."

NUT INVESTIGATIONS

John R. Cole, Albany, Ga.

"Some interesting data were furnished us during the week by Mr. R. D. Lewis, in charge of the soil and fertilizer investigations at the station here," he writes from the U. S. Pecan Disease Field Laboratory on April 17th.

"Our vetch cover crop in the Taylor orchard does not show the uniform growth that we think it should. The growth is best under the trees that have been sprayed with bordeaux mixture with practically no growth under the check trees. For instance, plots of trees that have been sprayed with 3-3-50 and 3-4-50 bordeaux mixture for about 10 years have accumulated a large quantity of lime, the greatest being 68-1/2 pounds per tree. There were 20 trees per acre, until one year ago when one-half of them were removed, making a total accumulation of 1370 pounds of lime per acre over the 10-year period.

"Since all of the trees in these plots have been receiving applications of ammonium sulphate for several years, the soil on the unsprayed, or check plots, has become quite acid. Mr. Lewis tested the lime requirement and estimated that the check plots will need about 1-1/2 tons per acre of Agricultural lime, while those plots receiving the high lime ratio bordeaux mixtures will not need any lime applications for the growing of cover crops.

"A hail storm occurred during the night of the 15th, and some damage resulted to some of the earlier varieties of pecans--Moore, Teche, and Monemaker--but it is not believed to have been very extensive. The Stuart variety remains practically dormant."

He wrote on April 10th: "Today the route agent for the Atlantic Coast Line conferred with the station staff regarding shipment of carload of pecans, 57,000 pounds, from a local marketing concern to Toledo, Ohio. These nuts were apparently shipped green in an unventilated car and a considerable loss occurred. We warn the growers each fall about harvesting and marketing green nuts, but apparently this warning does little or no good. However, the railroads will probably be more careful about accepting nuts for shipment in the future."

The official weather observer at Albany reported a fall of 4.03 inches of rain in the 24-hour period ending at 7 a.m. April 6th. According to newspaper reports only a few branches were blown off trees, and little damage done to them. Low temperatures prevailed all week, with a minimum of 42°F. These low temperatures checked the foliation of scab-susceptible varieties of pecan, which was rather fortunate because it would have been impossible to get a spray machine in some of the orchards to make the prepollination applications.

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"During the forepart of the week ending April 3, results were taken of greenhouse studies of filbert blight. Many lesions are now apparent on the leaves of shoots coming from buds that were inoculated in August 1936 just prior to leaf fall. The lesions are located primarily at the margins of the leaves and on the mid-ribs and veins. These results give further support to our contention that the fall is a very important period for natural blight infection."

C. L. Smith, Austin, Tex.

"The low temperature of last week killed many of the pecan buds that were out or that were swollen at that time," he writes April 3d. "The damage will probably not be very great on young orchard trees, but will likely be significant in older orchards in some localities. The fruit crop was completely destroyed in some areas. The weather continues cooler than usual for the season and the growth of pecans is slowed down accordingly."

Alton H. Finch, Tucson, Ariz.

Writing on April 3d he says: "Following the unusually cold temperatures of last January, the weather has continued cool with the result that spring growth is later than normal."

C. E. Schuster, Corvallis, Oreg.

"The weather has been so rainy that it is almost impossible to get any field samples for our work," he reported April 3d. "Very little farming has been done by any of the farmers. What has been done has been mostly mudded in. The weather generally stays cool. Everything is slow and behind times. The report is that for this time of the year there is the least pasture that has been seen for years. If the weather does not moderate and give good growing conditions, all the fruit will bloom at once. It is so late now that the prospects are for excellent blooming conditions and a heavy fruit crop."

HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

April 7th Dr. Hildreth gave a short talk over KOA (National Broadcasting Company, Denver, Colo.), discussing the work of the Cheyenne station.

About 7 inches of wet snow fell the night of the 6th and the forenoon of the seventh, melting away before Saturday--April 10th. The shipments of trees to shelterbelt cooperators in Kansas and Colorado were continued during the week ending April 10th.

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Practical features associated with the application of CO_2 or a 36°F. temperature for the prevention of soft scald, were presented to us," he writes April 10th reporting on his attendance, with Mr. Ryall, at the meeting of the National Association of Practical Refrigeration Engineers at Portland April 2. "A problem on the relation of small amounts of CO_2 gas accumulating in cold storage rooms to refrigeration distribution was suggested.

"Making a call at Hood River gave an opportunity for discussing with Mr. Kienholz the project of studying periods of pear fruit growth and maturation in that district. Mr. Kienholz demonstrated the relation between harvesting dates and quality in Yellow Newtown apples in connection with lots held for perennial canker studies. Apparently the Hood River district is harvesting this variety very much in advance of the season when optimum quality may be realized. That his conclusions were well founded was demonstrated in commercially packed Newtowns distributed as favors to those attending the convention in Portland....

"The weather has been seasonal with a great number of cloudy days, some showers, and temperatures between 32°F. and from 45° to 70°. It has not been favorable for rapid fruit bud development. Indications are that the apple blossoming period will occur April 30 to May 6."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

Writing from the United States Fruit Disease Field Laboratory on April 17th, he says: "Commercial fruit growers in the Springdale-Rogers area started spraying during the week and in riding along the road to Rogers last night the well known odor of lime sulphur was quite strong as we passed by the various orchards en route.

"At the present time the prospects are very bright for the 1937 apple crop. Most of the trees have a good bud crop, soil moisture is fairly abundant, and if the warm weather continues during the coming week the conditions should be ideal for a good 'set' of fruit.

"This has been the first full week of spring weather with warm days and nights. The apple buds have expanded rapidly under the influence of the mild temperatures and open blossoms are scattered over the trees."

NEMATODE-RESISTANT PEACH ROOTSTOCKS

As a sort of byproduct of his work on the phony peach disease, Dr. Lee M. Hutchins has apparently uncovered two extremely valuable nematode-resistant peach rootstocks. If they live up to their promise they are quite apt to permit the continued commercial culture of peaches in parts of the South where the peach industry has been threatened with destruction by the attacks of root-knot caused by nematodes. The two stocks are the Shalil peach (PEI No. 63850) and a hybrid of the Bolivian Cling and the Quetta nectarine (PEI No. 61302).

Back in 1913 the Division of Plant Exploration and Introduction secured from the Kurram Valley, Northwest Provinces, India, seed of this Shalil peach, cultivated in the Upper Kurram Valley along the white mountain, an area lying between 33.45 and 34 North, with an altitude of from 4600 to 6000 feet. Three fourths of the precipitation is in the form of snow during the winter months. The climate is comparable with that of Salt Lake City, Utah, the winters being somewhat milder. Of the seedlings grown at the Plant Introduction Garden, Chico, Calif., three appeared so promising that they were given PEI numbers 63850, 63851 and 63852. In September, 1927, Dr. Hutchins became interested in No. 63850, then a large bearing tree.

PEI 61302 is a hybrid originated at the Plant Introduction Garden, Chico, Superintendent J. E. Morrow obtaining it by crossing the Bolivian Cling (PEI 36126) and the Quetta nectarine (PEI 34684).

Incidental to researches on the phony peach disease, peach trees propagated on rootstocks of plum, apricot, almond and several peach varieties were grown in Dr. Hutchins' experimental orchards at Fort Valley, Ga. from 1925 to 1936. In the late winter of 1928 Elberta nursery trees budded on the Shalil seedling stock just mentioned were obtained from the Chico garden and planted at Fort Valley. By 1931 there was a notable difference in height and vigor among the trees on different rootstocks in the Fort Valley tests and the trees on the Shalil rootstocks were among the best in the orchard. In addition, the Shalil rootstocks used in the tests showed complete resistance to root-knot even in heavily infested soils!

Elberta nursery trees on the hybrid stocks (PEI 61302) were received from the Chico station in January, 1928. One hundred of these trees were planted in one test orchard; 30 in another. In both they made unusually vigorous growth. Upon examination, the roots of this hybrid stock were found to be free from nematodes, whereas "natural" and other nematode-susceptible roots in the same orchards were galled by root-knot.

The Shalil may be propagated from seed; the hybrid propagates readily from cuttings but we have not determined as yet whether seedlings will retain nematode resistance.

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"There was considerable damage to cranberry vines by ice during the winter of 1935-36. In some cases the vines were injured so severely that they died promptly on the removal of the winter flowage. In some places, however, the damage was less serious and did not show up immediately. Some of this injury is only now becoming conspicuous," he writes April 15th. "This is obviously due to weather conditions existing a year or more ago.

"On April 13th the winter flowage was partly removed from the large bog at Double Trouble which had been sprayed with copper sulphate for control of algae. Observations were then made on the effectiveness of the spray. There had been one small area of perhaps half an acre left untreated. The growth of algae over this area on the 13th was so dense as to completely obscure the vines. Over nearly all of the sprayed portion there was a very thin layer of algae over each individual leaf and stem, but none of the looped and tangled screen which is responsible for the 'paper' residue on bogs after the water is drawn. This thin layer appeared to be composed mostly of dead algal threads, apparently the remainder of the growth which had been present at the time of spraying on March 22 and 23. There was no question but that the spray had done a great deal of good, but since nearly another month will elapse before the water is finally removed, we cannot tell whether there will be much difference between the sprayed and unsprayed areas at that time.

"There has not yet been any apparent damage to blueberries from either low temperatures during the winter or spring frosts. The effects of the heavy frost of May 15, 1936, however, are still showing up, largely as browning of the pith on the fruiting laterals of certain varieties (especially Rancocas) in a number of fields. In some cases these laterals are S-shaped, having made a downward turn at the point of injury and later grown upright again. Even the effects of the low temperatures of two and three years ago continue to show up. Apparently this will continue as long as there remains on the bushes any of the woody tissue that was there at the time of injury."

W. W. Aldrich, Medford, Oreg.

Writing from the U. S. Pear Field Station on April 19th he says: "It is quite evident that this season earliest blooming occurred in the higher locations, where nightly minima were from 5 to 10 degrees higher than the lower locations. In other words, the cooling effects of nightly minima contributed in large measure to the delaying of blossom development.

"On the morning of April 11, air temperatures in colder locations dropped to 26.8°F. Where Anjou blossoms had advanced to the 'pink' and 'white' stages (minimum temperatures at which no injury would be expected being 27° and 30°, respectively) two or three hours of orchard heating were necessary. On April 16 a minimum of about 29° necessitated heating again for one or two hours in the colder orchards."

IN WHICH AN OUNCE OF PREVENTION PROVES TO BE WORTH A POUND--STERLING!

Potatoes in South Carolina

There are in coastal South Carolina approximately 8,000 acres of land that are planted annually to early market potatoes. Since the introduction of this crop to this area, practically all growers have practiced either spraying or dusting with copper fungicides as a means of control for late blight. An average of three applications made on each farm during the season brought the annual cost to approximately $60,000.00 for the section. Prior to 1930, when the potato acreage was larger, the cost of fungicide applications for the control of this disease was even greater.

In view of this, it is a little startling to have Dr. Wm. D. Moore tell us that the entire fungicide bill has been saved during the past three years as a result of information he has been able to give to growers on the basis of his studies of the relation of weather conditions to plant disease development in certain sections of the South!

"It is a well known fact that varying weather conditions are the limiting factors in many instances to the development and spread of plant diseases," he pointed out at a meeting of the Southern Agricultural Workers' Association at Nashville early in February. "Instances are too numerous to mention but damping off and late blight of potatoes are cited as examples of diseases that are closely related to weather conditions.

"Quite often control measures are set up by certain communities that are purely empirical in nature and without a critical study of the historical background of the disease in question. That this is valuable for certain individual reasons cannot be questioned, but from an economic standpoint over a period of years the problem requires careful consideration.

"In view of the fact that the practice of spraying and dusting in South Carolina was instituted on the basis of data compiled in other potato growing sections of the country, the question of the necessity for a general spraying or dusting program for this particular area appears to be of considerable economic importance. A study of the records showed that since 1917 late blight has developed in coastal South Carolina only five times, and in only three instances was the infection of appreciable importance."

From Dr. Moore's data it appeared that there was no necessity for a regular and uniform schedule of spraying and dusting for late blight control in coastal South Carolina, and, as stated, Dr. Moore has been advising growers to spray and dust only when weather conditions indicate that it will be needed, with the result that the entire fungicide bill has been saved during the past three years. That the ounce of prevention is worth a pound--Sterling--is quite evident from the estimate of $60,000 saved growers in each of these three years!

ALMOND CULTURE

Milo N. Wood is the author of Circular No. 103, "Almond Culture in California," recently issued by the California Agricultural Extension Service (College of Agriculture, University of California, Berkeley, Calif.) In 1918 the California Agricultural Experiment Station published its Bulletin 297, "The Almond in California," by R. H. Taylor, and this was revised in 1925 by G. L. Philp and published as station Circular 284. The present Circular retains such information from these former bulletins as is now considered useful and adds much new material to bring the subject up to date. It contains 96 pages with 47 illustrations and 7 tables.

Attempts have been made to grow the almond in nearly every agricultural region, but because of its exacting climatic requirements it can be grown with profit only in the most favored districts. At present practically all the almonds grown commercially in the United States come from California. The average annual production is 10,000 tons--about 20,000,000 pounds in the shell. Top production of recent years was in 1926, when 16,000 tons were grown. The bearing acreage is now estimated at from 70,000 to 80,000 acres.

ADMINISTRATIVE NOTES

Tolls--and the Bridge of Sighs

The original "Bridge of Sighs" connected the palace of the doge (and I said doge; not dogs) with the state prison of Venice. Over this bridge the state prisoners were conveyed from the judgment hall to the place of execution. Byron speaks of it in "Child Harold's Pilgrimage":

> "I stood in Venice on the Bridge of Sighs,
> A palace and a prison on each hand."

The quotation leads to the impression that the poet's hands were quite impressive in size and strength, but I doubt if they would be large enough to hold the burden of woe apt to result from the use of a modern bridge of sighs--the new San Francisco-Oakland bridge. The Comptroller General has notified us that "Payment of tolls in connection with the movement of Government vehicles and personnel across the San Francisco-Oakland Bay Bridge on Government business....is unauthorized in view of the terms and conditions of the joint construction permit..."

One of our workers handed over 50 cents toll charges for his auto while crossing this bridge only to be shocked by having the item suspended from his travel account with the statement that the agreement in connection with advancing Federal money for the construction of this bridge provides that Federal vehicles and personnel on official business shall be allowed free passage over the bridge. So, every time you can convince the toll collector that you should be allowed to pass free, you save 50 cents. If you pay without an argument, you will lose another argument with the accounting officers later. Also 50 cents.

INJURIES TO EMPLOYEES

Employees injured in the performance of official duties should be sent to hospitals or dispensaries maintained by the United States Public Health Service. Where such are not available, treatment is to be obtained from one of the designated physicians in the locality. The point of importance is that the employee's official superior is responsible for arranging for the necessary medical treatment, a responsibility that does not end until the employee is cured or leaves the Government service. So, supervising officers should ascertain the location of designated physicians in their locality and acquaint all employees under their supervision with the information. The local postmaster can usually furnish this information concerning available medical facilities, etc.

In localities where there are no physicians designated by the United States Employees' Compensation Commission, and no United States medical officers, hospitals or dispensaries, the employee is authorized to select for emergency treatment of his injury any reputable physician licensed to practice medicine and surgery, though this does not authorize the employment of doctors of osteopathy, chiropractors, mental healers, etc., unless their services are prescribed by a physician licensed to practice medicine and surgery, and approved by the Commission.

The official superior must submit to the nearest available competent physician a letter requesting treatment for the injured employee, instead of using Form C.A.16. The letter need be merely a simple request for the treatment, giving the important facts in the case; and a copy of it should be sent at once to Mr. Gillette together with Forms C.A. 1 and C.A. 2. The C.A.16 form should be used only when applying for treatment at a United States Hospital or dispensary, or to a designated physician. Physicians in localities where Government hospitals, dispensaries or designated physicians are not available, and who are requested to treat injured employees should be informed that the United States Employees' Compensation Commission will pay all reasonable charges not in excess of those prevailing in the locality for persons with the average income of a Government Civil employee.

In cases requiring hospital treatment, a reputable, well-equipped hospital should be selected, and treatment at general-ward rates only is authorized unless the Commission determines that the injury is such as to require a private room. Of course, an injured employee may select a private room if he is willing to pay personally the difference between the general-ward rate and that for the private room.

Physicians' or hospital bills should not be paid by the employee, but should be sent to Mr. Gillette for transmittal to the United States Employees' Compensation Commission. Such bills should be itemized to show the nature of the services rendered, and must be signed by the injured employee to show that they are correct.

Vol. 9 No. 9 May 1, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., May 15, 1937 No. 10

Seventy five Years young!

Just seventy five years ago today, May 15, 1862, the act creating the United States Department of Agriculture was signed by President Lincoln. In that year $64,000.00 was appropriated for its work. This, of course, wasn't the first appropriation for agriculture in this country, nor the first Federal aid. John Adams as early as 1776 introduced in the Continental Congress resolutions to encourage the growing of certain crops and the formation of societies for the improvement of agriculture.

Washington, too, early proposed Government aid to agriculture. Such aid had been given since Colonial times through the active interest of Benjamin Franklin and other American representatives in foreign countries who sent back seeds and plants they thought might prove of value in this country. Later Henry L. Ellsworth, Commissioner of Patents, undertook to distribute such material among our farmers and it was on his recommendation that in 1839 an appropriation of $1,000 was made by Congress for collecting and distributing seeds and plants, prosecuting agricultural investigations, and procuring agricultural statistics.

Federal aid to agriculture was administered through the Patent Office from 1839 to 1862, probably because at that time most of the patents being applied for concerned agriculture. For that matter, even as late as the close of the Civil War more than half of the workers of the country were engaged in agriculture. That there are today five times as many in manufacturing and ten times as many in trade and transportation as then is due in no small part to the increased efficiency in agriculture that has released these workers from farm activities. The average farmer today produces two or three times as much as his grandfather did. Even the farm animals have been swept into the widening

stream of farm efficiency. Cows are producing twice as much milk as in Civil War days; hogs require only half as much corn per one hundred pounds of gain; and hens are laying twice as many eggs a year. Either that or there will be new cows, new hogs and new hens on the farm!

An idea of how much agricultural research has aided the fruit and vegetable industry of the country may be sensed from the fact that every one of our important horticultural crops has either been introduced from abroad or developed here by breeding and selection. And the work goes on as new sorts are needed to meet special requirements of disease-resistance, utilization, etc. An astonishing number of fruit and vegetable varieties popular only a half century ago have been superseded by new and improved sorts. And the fact that so many of them are well and favorably known to the majority of our people is due quite as much to improved methods of handling, transportation, storage and utilization as to the bringing in or creation of superior sorts.

Seventy five years young! Seventy five years of achievements so amazing that they deserve a place in Ripley's "Believe it or Not" series. Had it been practicable to patent the various discoveries and creations of agricultural research, the royalties would by now have made the Department one of the wealthiest organizations on earth. In our own field of horticultural research, for example, when William Saunders in 1873 sent two Navel orange trees from our greenhouse in Washington, D.C. to Mrs. L. C. Tibbetts at Riverside, Calif. to lay the foundation for the present Citrus industry of the Southwest, he actually opened up a wider vein of gold than discovered in the famous days of 1849. The cash value of the Citrus crop of the Southwest has already surpassed that of all the gold mined in California since 1848! And the golden flood rolls on.

The phenomenal growth of the canning and preserving industry has made the findings in connection with our fruit and vegetable utilization studies invaluable. Often they have marked the line between success and failure for the handler. The improvements in refrigerator car construction and the general handling of fruits and vegetables, developed in connection with our fruit and vegetable handling, transportation and storage and market disease investigations, have meant not millions but actually hundreds of millions of dollars in savings to growers and handlers--and, more important still, vastly superior products for the consumer and decidedly lower prices. In fact, but for these improvements in utilization methods and handling, many of the fruits and vegetables now consumed in vast quantities would be practically unavailable to many of our people.

To make the farm a better place on which to live; to make possible the production of better crops at less cost; to safeguard the grower against losses from diseases and weather fluctuations to the end that the consumer may also have better fruits and vegetables at lower cost--that is considerable of a program. To date we have more than lived up to it, and so it begins to look, as we pass the 75-year line, that the first 100 years are going to be the--proudest!

NURSERY STOCK INVESTIGATIONS

Etiolation and Apple Growing. It begins to appear that a very essential part of the equipment of the up-to-date apple grower is a good dictionary. Without it, I'm wondering if the average grower would be able to take advantage of the very successful use of etiolation in rooting apple variety stem cuttings. If he has a good dictionary, however, he can learn that etiolation is actually a condition resulting from growth in complete or nearly complete absence of light--and go on from there.

Dr. Frank E. Gardner is featuring etiolation in connection with his nursery stock investigations. For years he has been interested in rooting apple cuttings and has tried out many methods and treatments. As apple growers know--without recourse to the dictionary--stem cuttings of apple varieties do not root to any appreciable degree by the usual procedures employed with cuttings of many other plants. But when Dr. Gardner turned etiolation loose, the results were surprising. The rooting of cuttings up to 70 percent in the propagating bench was obtained in the case of the McIntosh; and if the shoots were girdled early in their growth by means of copper wire, 100 percent rooting could be obtained. Girdling alone, however, was of no avail.

Dr. Gardner's first problem was to devise a way of etiolating the shoots as they grew on the tree, before removing them for cuttings. He finally got around to using ordinary black insulating tape for this purpose. A piece 2-1/2 to 3 inches long is sufficient to wrap spirally four or five times around the young shoot as near the growing tip as possible. The partially expanded leaf or two near the tip is first removed, for if bound to the stem all further shoot elongation may be checked.

When properly applied, this insulating tape does not interfere with shoot elongation nor with radial growth because the tape gives as increased stem diameter takes place, constantly keeping a snug, light-tight covering over this short section of stem during its subsequent development. The application of tape is so readily accomplished that one man can easily tape several thousands shoots in a day, if the size of the tree permits working from the ground.

When cuttings are to be made, it is only necessary to remove the shoot, strip off the tape and make the basal cut in the etiolated area. By this method, rooting of cuttings up to 70 percent was obtained, as already stated. Most of the early work as done with the McIntosh apple, and it was soon discovered that one or two roots appeared on the cuttings only from the axil of the bud. Taping of only internodes was entirely without benefit. It was further discovered that if the young shoots were taped to within 1 inch of the growing tip instead of as close to the tip as possible, the subsequent rooting markedly fell off. By taping 2 inches back from the tip, the rooting was still further reduced; and at 3 inches back almost no rooting resulted.

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, East Wareham, Mass.

"Seedlings from crosses of 1935 which had been set out on the bog last summer and therefore under flood during the winter came out in good condition," he reports from the Cranberry Diseases Field Laboratory on April 24th.

"The winter flood has not been taken off from many of the bogs. Owing to the very mild winter there was less winter flooding injury than during the preceding winter. Accordingly there is not as much difference in the appearance of sprayed and unsprayed vines as has been observed previously but I think that a little difference can be noted in favor of the sprayed vines....

"The weather was very cool during the latter part of the week with a very heavy rain Thursday night and Friday. Blueberries are coming out slowly, and are now in excellent condition."

G. A. Meckstroth, Willard, N.C.

Writing from the Coastal Plain Station on April 24th he says: "The Wallace strawberry market opened officially on Monday, April 19, on which date about 300 crates were sold, the price ranging from $3.75 to $6.00 per 24-quart crate. Prices have remained consistently high during the past week. On Tuesday about 400 crates were sold, Wednesday about 800 and on Thursday about 1500. There has been a change of opinion recently as to the prospect for this season. Up to a week ago it was felt that the frequent frosts we have had during February, March and April seriously reduced the crop. The general opinion now is that the crop will be 75 percent of normal or better. The plants are now putting out a fine crop of new buds and blooms and, with sufficient moisture, it appears that the present one will be a long drawn out season.

"April 12 and 13 we had a frost in the Wallace section that killed practically all open unprotected blossoms. On April 12 a minimum of 32°F. was reached and on April 13 the temperature dropped to 30°."

George F. Waldo, Corvallis, Oreg.

"Beginning Sunday evening, April 11, aheavy steady rain set in which continued more or less until Thursday afternoon, resulting in one of the latest floods of the Willamette river. Water covered most of our plantings. However, warm drying weather which set in beginning April 16 was the cause of a rapid fall in water and damage to our plantings did not seem to be great."

DECIDUOUS FRUIT INVESTIGATIONS

C. O. Hesse, Davis, Calif.

"The week started out bright and warm and the plums came along rapidly during the first part," he writes April 3d. "As a result we were able to finish the breeding work for this season by the end of the week. The crosses made this year may be summarized in approximate numbers as follows: Apricot crosses, 3200; apricot selfs, 5000; plum crosses, 14,000; and interspecific crosses, 1500. The breeding conditions during this season have been only average, all things considered. The apricots came out during a period of fine weather, but the blooming period was very short, making it impossible to complete as full a program as had been planned. The plums were very well spaced as far as blooming period was concerned, but there were two weeks of bad weather, and several varieties which we had planned to use were rather shy of bloom. In removing bags from the various trees it has been noticed that the apricots apparently set very well and somewhat better than the few plum crosses examined to date."

FRUIT AND VEGETABLE HANDLING, TRANSPORTATION AND STORAGE INVESTIGATIONS.

James S. Wiant, New York, N.Y.

"During the past 10 days five experimental cars of California asparagus have been examined here," he writes May 3d. "These represented tests by Mr. Pentzer and others on the value of precooling by setting the packed crates in tanks of ice water. Although there has been a slight warping of the lower side slats and considerable loosening and tearing of the brand labels the asparagus has arrived in excellent condition.

"Recent observations of market diseases included the following: In early April, considerable decay was noted in boat shipments of Florida peppers. A species of Phytophthora is apparently responsible. Heavy rains had been reported in the growing section previous to the time of picking. Florida potatoes arriving by boat during the middle of April showed high percentages of bacterial soft rot. In many instances the decay appeared to be following mechanical injuries in numerous spots scattered over the surface of the tubers--possibly all resulting from the washing process. Texas onions brought in by boat in increasing quantities during the last weeks of April have been showing in occasional lots a serious blemishing of the outer scales. Although this resembles alkali injury it is uncertain just what factors brought it about. Macrosporium side rot has been common while bacterial soft rot and gray mold rot have been found in varying amounts at the neck. Bacterial soft rot has been very serious in the Crystal Wax variety, more than half of the onions in some bags having the outer scales decayed. The most interesting observation has been that of finding white rust on Texas spinach during the last of the season which has just ended. This appears to be the only record of the occurrence of the disease on spinach and apparently the fungus (Albugo occidentalis) which is confined to the spinach family, has been recorded only several times previously on any plants."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

Pear Scab. "An orchard containing over 50 percent scab last year was obtained for this season's tests," he writes April 15th. "We have our combination portable-stationary spray outfit set up and applied the delayed dormant lime-sulphur on March 29. Due to considerable rain since, we will apply a pre-pink April 16. Eleven different tests have been outlined for trial. Other orchards in the valley will give a check on spray dates since the moist ground conditions made it impossible for some growers to apply their first spray at the proper time. The orchard used for tests in 1932-33 is alive with twig pustules and I would hazard a guess that the crop will be a total loss. Some twig scab is present in the lower valley and constitutes a distinct menace. A laboratory spray test against scab pustules again demonstrated that lime-sulphur is very effective in actually burning the spore surface and inactivating such pustules. Keitt's sprays also appear effective. The coppers are only slightly injurious and the wettable sulphurs not at all....

"Examinations of Newtowns periodically picked for canker rots are outstanding in their indication of better quality in the fruit picked from two to six weeks after normal harvest."

W. W. Aldrich, Medford, Oreg.

"Our records show that in 1937 full bloom started from 8 to 10 days later than in 1936," he writes from the U. S. Pear Field Station on April 26th. In 1935 it was observed that Anjou at the Medford Experiment Station blossomed about two days earlier where the trees had received a thorough irrigation after harvest the previous season. This spring casual observations of Bartlett, Bosc and Anjou in several orchards indicate that irrigation after harvest in 1936 caused bloom this spring to open from two to five days early.

U. S. HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"The station was enveloped in a thick haze of dust on the 27th which was brought in by a southeast wind from the dust bowl area of southeastern Colorado and western Kansas," Dr. Hildreth reports May 2. "The silt was borne to a high altitude and is said to have been carried to the Canadian border, the western edge being about 30 miles west of Cheyenne. Electric lights were required here at midday. About 5:30 p.m., however, we had sprinkles of rain followed by snow and a shift of wind to the west which cleared the atmosphere. A full head of water is now stored in our reservoir."

HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

N. H. Loomis (small fruit investigations)

"It is interesting to note that the riparia and rupestris species of grapes are in general much advanced in growth over the other species," he writes April 24th. "The labrusca is somewhat intermediate, while the aestivalis types are much the latest in development. This will make it impossible to make reciprocal crosses of some of the varieties which we had planned on crossing."

J. M. Lutz (fruit and vegetable storage and utilization)

"Cooking tests of Porto Rico and Triumph sweetpotatoes indicated no appreciable difference in quality between potatoes stored in a sweetpotato bank and those stored in a sweetpotato house after five months storage," he writes April 3d. "Both of these storage conditions were markedly superior to potatoes stored in an unheated shed."

He had written March 27th: "Inspection of grape jellies made of grapes grown at Meridian in 1936 was made during the week. Carman, Manito, Beacon, Lenoir, and Catawba all produced very acceptable jellies. The good results obtained with Beacon and Lenoir were especially interesting in view of the apparent adaptability of these varieties to this section. Some of the Lenoirs produced a bushel of grapes to the vine last year.

"Strawberry harvest in this section has again been delayed for three or four weeks on account of frost. A few cars a day are now moving out of Hammond, La., with heavy shipments expected to start about April 5. Practically all strawberries will be precooled this year. Irish potato shipments from Louisiana are expected to start about May 5 or 10.

"In the Crystal Springs, Miss. area tomatoes and beans are now going into the fields. Cabbage is starting to head and shipments will probably start about April 30. English pea shipments are expected to start about April 20."

POTATO INVESTIGATIONS

C. F. Clark, Presque Isle, Me.

"The potato plants in the greenhouse, started this spring from the true seed, have grown rapidly and those most advanced are ready to be potted" he writes May 1. "We expect to start that work the first of next week. The local office of the Market News Service closed April 30. The total number of carlot shipments from Maine up to that date was 44,300. The number of cars of certified seed shipped was 4,971, of which 185 were Katahdin and Chippewa, two of the new varieties originated by the U. S. Department of Agriculture."

NUT INVESTIGATIONS

F. N. Dodge, Robson, Louisiana

Writing from the pecan station on April 19th he says: "With the ground dry enough to work for the first time for a month, we have cut all cover crop samples and done 90 percent of the plowing on the station this week. Peas and vetch cover crop averaged 25,770 pounds of green weight per acre in the Cultural Block.

"Pistillate bloom is in progress with 26 varieties showing blossoms. Moore is the variety which is farthest advanced. It and Mahan again promise to hold their place as the heaviest producers. Only a few of the new shoots can be found on Moore trees which do not have a cluster of pistallate blossoms. Indications are that an excellent pistillate bloom will be had on nearly all of the varieties which have shown any bloom to date.

"The first appearance of staminate bloom is later this year than last year by about seven days. Pistillate bloom is about two days later than last year. Data taken as to time of first appearance of unfolding of leaves shows that that stage of development was one week later this year than last. The warm weather of the past 10 days seems to have hastened the appearance of the pistillate blossoms and caused less difference between the two years for it than for the staminate bloom. Last year Nelson was the first variety to shed pollen and was shedding it by April 17th. This year it has not shed any pollen as yet, but gives indications for pollen shedding in a day or two. No variety has shed any pollen to date."

J. R. Cole, Albany, Ga.

"It looks now as if we will have the heaviest pistillate bloom of all varieties that we have had since I have been here, that is on varieties that have advanced far enough to determine if they are going to show any pistillate blooms," he writes from the U.S. Pecan Disease Field Laboratory on April 24th. "This is especially true in the plots where we are carrying on our experiments with the exception of the Alley and DeWitt. The trees are coming out so unevenly in that plot it is hard to determine about the crop. The trees in the Kudzu plot are much farther advanced than those receiving clean cultivation in the summer and vetch in the winter.

"Scab is making considerable progress. In the Palmyra orchard where we had excellent control of this disease last year and knocked all old shucks from the trees during the winter we have a leaf infection of over 50 percent just as the pistillate flowers are showing. We have been unable to get counts on the unsprayed trees, but in an adjacent orchard scab is much worse...."

NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"The past two weeks have been mainly spent in indoor work as it has been raining so steadily that outdoor work is impossible. Right now (April 17th) we have the highest water that we have had for some time. The rainfall for the first 15 days of April has set an all-time record for the month. Temporarily the sun is shining, but there is no assurance that we will have good weather.

"In general, the blooming season is somewhat late. A good many of the peaches and early cherries have been in full bloom during the rainy weather so that there is considerable doubt as to the crop. Otherwise no damage has resulted, except in general farm work, as none has been done. With the winter killing that occurred, conditions do not look too favorable."

Milo N. Wood, Sacramento, Calif.

"Observations show that the almond crop will be light in many of the orchards because of lack of proper pollination," he writes for the two weeks ending April 24th. Because the time during blooming season during which bees could work was comparatively short, the set of almonds in orchards having most bees is much heavier than in others depending upon a smaller number of colonies for pollination purposes.

"A considerable number of almond growers are bringing to our attention damage done by brown rot in almond orchards this year. This disease is appearing in many orchards which hitherto have not been troubled with it. Previously most of the damage has been confined to the Drake but this year the Ne Plus Ultra variety, I.X.L. and other varieties seem to be affected with it also.

"Recently the dry weather accompanied by dry north winds has apparently checked the development of the disease and if such weather continues it seems probably that little further damage will result. In districts in which foggy and damp weather continues the disease will, no doubt, do further damage. As a matter of fact, the brown rot has considerably reduced the crop in some of the orchards. It seems that the disease is more universal than has been the case in the past."

Alton H. Finch, Tucson, Ariz.

"Pecan blossoming in the Yuma valley is some 10 days later than usual," he writes April 17th. "Pistillate bloom is now out in most varieties generally over the Valley. There appears to be a moderate to heavy bloom. Many young orchards are experiencing their first heavy pistillate blooming. Barring a heavy drop of young nuts during May, a record crop will be produced."

ADMINISTRATIVE NOTES

For married Women only. The Comptroller General's office has held (4 Comp. Gen. 165) that "When a woman employee in the Government service marries her legal surname becomes that of her husband and such surname is to be used by her in signing the payroll instead of her maiden name."

Of course, where a woman at the time of her appointment is married and yet uses her maiden name in connection with her work, such maiden name being used in making the appointment, there is no apparent objection to the continued use of that name on payrolls, but with respect to women who marry while in the Government service, the established practice is to require that the pay rolls show the change in name.

This matter has been brought up in connection with the request of an employee of the Social Security Board who recently married and who desired to continue using her maiden name. It is a matter of common knowledge, of course, that for some years there has been a tendency on the part of women in public life to continue the use of their maiden names in their work, thereby retaining any prestige those names may carry, rather than submerging them or losing them altogether upon the assumption of other and perhaps unknown names in their particular fields of activity. As the executive director of the Board pointed out, the laws of the land in this regard are based on custom and the evident changing custom would appear to warrant the continued use of maiden names where it seemed desirable to the woman concerned.

However it was a condition not a theory that confronted the applicant and since the Comptroller General has ruled specifically that a woman who marries while in the service must take the surname of her husband so far as payroll use is concerned, that seems to be that. This is written, of course, to show how the matter stands and in order that insistence upon the rule may not be attributed to stubborness on the part of Roy Gillette.

How about Your Differential? Dr. Max B. Hardy, Box 656, Albany, Ga., tells our Inventory section that he has a set of high speed differential gears--ring gear, pinion, and speedometer gears--for a 1935 Ford V-8 1-1/2-ton truck. He has no use for this set and if you can use it either for conversion or to replace worn parts in one of your official trucks, get in touch with Dr. Hardy.

ADMINISTRATIVE NOTES

Resignations: Accrued Leave. Care should be taken to see that resignations of employees are made effective at the expiration of their service plus any annual leave. While the Act of March 14, 1936, makes leave a right rather than a privilege, it makes grant of leave in kind only, that is the right to be absent from duty for a prescribed period without loss of pay while retaining a status as one of the "civilian officers and employees of the United States" included within the purview of the law. There is no provision of the law, expressed or implied, authorizing a payment in lieu of leave not granted to a former officer or employee who no longer has a status upon which the statute may operate. Hence, after an employee becomes legally and effectively separated from the service there is no authority to restore him to the status of an employee solely for the purpose of granting leave which had accrued but was not taken prior to such separation.

This question was brought up recently in connection with an employee whose resignation was made effective at the conclusion of his last day of service and without taking into consideration annual leave. When the error was detected his superior officer tried to secure pay for accrued leave, but the Comptroller General's office decided against it, saying "This office has recognized the fact that the statue, unlike certain prior leave acts, makes it the plain duty of administrative officers to grant the leave, but there must be recognized, also, the fact that no remedy has been provided to officers and employees who do not receive the leave prior to their separation from the service because of administrative failure or refusal to comply with the statute...." The granting of leave, that is, is entirely an administrative responsibility, and misunderstanding or negligence in the administration of the law do not form the basis for a claim against appropriated moneys for additional compensation.

Not only as a matter of justice, but in order to safeguard us against unfriendly feelings on the part of separated employees, every attempt should be made to make certain that all resignations are made effective at the expiration of any earned annual leave the employee may have to his credit--and not merely on the date he quits work.

Annual Leave in Traveling. Memorandum No. 45 of the Office of Budget and Finance of the Department has recently been distributed to all of our section leaders, station superintendents, etc. It discusses Comptroller General rulings on travel expenses in connection with leave taken en route while on official trips for the Division. This memorandum should be read carefully by all employees who may have occasion to perform official travel. Probably section leaders and station superintendents should circulate their copy and have it initialed by all employees before placing it in the reference files.

Vol. 9 No. 10 May 15, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

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Vol. IX Washington, D. C., June 1, 1937 No.11

South African Grapes On the New York Market

"A shipment consisting of 5,000 boxes of South African grapes arrived in New York on the S/S BERENGARIA on April 30," reports C. O. Bratley, writing from the U. S. Market Pathology Laboratory on May 18th. "This is the first shipment of grapes from that section since the fruit fly regulations allowed importation of the fruit providing it had been subjected to temperatures below 34°F. for two weeks.

"The refrigeration of the grapes en route was observed by members of the Bureau of Entomology and Plant Quarantine. To make doubly certain that the quarantine requirements were fulfilled, the grapes were first held for two weeks in a precooling plant at Capetown. They were carried as refrigerated cargo (32°F.) on a steamer bound for England. The transit period included two weeks en route to England, five days in a cold storage house there, and about five days for the trip across the Atlantic.

"The grapes were packed in "6-inch grape boxes" which resemble somewhat our cherry lugs, being 6 inches deep, 18 inches long and 12 inches wide. Each bunch was wrapped individually in parchment tissue and packed with woodwool. Generally the boxes weighed 15 pounds, with 10 pounds net weight of grapes. The condition on arrival was excellent. In a few varieties gray mold rot was found but in only one, Henab Turki, was this of commercial importance. The grapes were plump and firm and on the dark skin varieties the bloom was still intact. Although the flavor of the various varieties was good, I felt that they were somewhat lacking in this factor.

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS

C. O. Bratley (continued) South African Grapes on New York Market

"The Barlinka variety made up the bulk of the shipment. It is a round, dark purple to black grape and in appearance reminds one of the Ribier variety. Other dark skin varieties in the shipment were Henab Turki, Flaming Tokay, Red Emperor, and Prune DeCazoule. White skin varieties were represented by Waltham Cross, Raisin Blanc, and Almeria.

"The shipment was made by the South African Deciduous Fruit Growers Exchange. Mr. V. Van Der Willigan, General Manager of the Exchange, accompanied the shipment. He told me that iodine wraps for the prevention of mold and decay were not being used on the grapes because of the attitude of the health authorities in England concerning the possible poisoning due to the absorption of iodine by the grapes.

"The grapes in the present shipment were not given any gassing or other antiseptic treatment after picking. One method which has met with some favor in handling of delicate varieties in South Africa is that of dipping them momentarily in 95 percent alcohol. This is said to kill spores of Penicillium and Botrytis and if the grapes are drained well, no injury is caused.

"The American Fruit Growers, Inc. handled the fruit in New York City, selling some of it at private sale and some at auction. Because of the relatively high prices asked, there was little demand. Consequently part of the shipment was placed in cold storage and sold privately during the following two weeks.

"The average selling price was in the neighborhood of $1.40 a box. Emperors drew a slightly higher price than any of the other varieties. On some of the high class retail stands the fruit during the week was selling for as much as 75 cents a pound.

"On May 10th, a 6,000-box shipment of the same varieties arrived on the S/S GEORGIC. Again the fruit was in excellent condition. This fruit was sold entirely at auction and brought slightly higher prices than the earlier shipment, averaging about $1.60 a box."

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS

Edwin Smith, Wenatchee, Wash.

"From the standpoint of flavor," he writes, "we are coming more and more to the conclusion that April is too late to store Delicious apples for the good of the variety's reputation with the consuming public.

"The variety can be stored that late and still retain a satisfactory crisp texture, without becoming markedly mealy after being held at 65°F. for six days following withdrawal from cold storage. However, the flavor has depreciated to an extent that it is either mild or neutral when taken from storage, and prior to the passage of six days at 65° it has become stale or, in the case of fruit harvested before optimum maturity, astringent stale....

"The weather during April was monotonous in the number of cool, cloudy days with northwest winds. There was considerable precipitation during the first half of the month. Although blossoming of fruit trees was held back it was also an unfavorable spring for the application of dormant sprays. In early April there was every indication that apples would be in full bloom by the end of the month. On April 30th they were in the early pink stage in Wenatchee, with Anjou pears in full bloom and Bartletts approaching full bloom. The Bartletts were about two days behind the Anjou pears."

DECIDUOUS FRUIT INVESTIGATIONS

M. A. Smith, Columbia, Mo.

"The local meteorologist's figures indicate that rainfall for April and the first week of May was over 50 percent greater than that recorded during a similar period in 1936," he writes from the U. S. Fruit Disease Laboratory. "Generally the crop season is later and from the information we now have regarding scab development, we may expect some primary scab infections to appear later. A thorough examination was made of foliage in the Springfield district May 1 but at that time no infected foliage was found....

"Almost every apple variety bloomed very heavily in the Marionville and Mountain Grove districts. Conditions for pollination at Marionville were excellent. The Mountain Grove station reports that pollination conditions among the early varieties were very good. Rain interfered to some extent during pollination of later varieties there."

DECIDUOUS FRUIT INVESTIGATIONS

C. F. Kinman, Sacramento, Calif.

"The Muir peach disease work is going along satisfactorily," he writes May 1. "Diseased trees near Chico, Calif. set only a few fruit again this year while in cooler regions trees that appear to be affected the same as the diseased ones at Chico have set a good crop again this year. The striking difference in summer temperatures between the two regions may be the explanation why the trees in the two localities behave so differently in regard to fruit setting.

"There has been a heavy drop of small fruit in many peach orchards, probably due to the rainy weather when the trees were in bloom. There has been more shedding of blossoms and small fruit than I have noticed in any other year and there was no injury from frost anywhere in this region this spring. Indications are, however, that there is still sufficient fruit on most of the nine trees that I used in the thinning experiment to make results entirely dependable. It may be desirable to drop out one or two of the nine trees later.

"Many of the cherry orchards in this region have almost no crop of fruit at all due to the failure of the blossoms to set. Rain during the blossoming season was apparently the cause."

C. O. Hesse, Davis, Calif.

"Weather for the last month has been mostly clear but on the whole rather cool for this t ime of year," he writes May 8th.

"As a result it is becoming evident that the apricot harvest will be considerably delayed, probably ten days to two weeks. Dr. Tufts does not expect the first picking for shipment in the Winters district to be before June first, which is a week to ten days later than normal.

"Apricots for drying or canning will not come off for another ten days in that district, and Davis is always ten days or more behind the Winters district. Therefore, there will be few apricots ripening at Davis before the last week of June.

"However, the cherries started ripening at Davis this week. Chapman, Knight, Belle of Orleans, Vaughn, and a few others were among the first to ripen.

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"Automatic measurements of the growth of a peach were begun last week," he writes in a letter to Dr. Cullinan under date of May 17th. "A week's observation on growth corroborated what we had determined before by hand measurement, that considerable shrinkage of the fruit occurs during the day. The fruit is in the pit-hardening stage, the stage of slowest growth, and increases in circumference about 1 mm. per day. Most rapid growth occurs between 6 p.m. and midnight; from then until 6 a.m. very little enlargement occurs, and at about 6 a.m. the peach starts decreasing in size. The shrinkage roughly amounts to 1/2 of 2/3 of the previous night's growth. One clear day, following a rainy night, practically no shrinkage and no growth occurred. Future behavior will be followed with interest but another specimen must be selected. A curculio larva chose the fruit under observation for its habitat!

"The seedlings from the 1936 peach crosses are growing rapidly, without a single casualty from transplanting in the lot of 2,000. They are being given the best of cultural care and will be irrigated if a spell of dry weather occurs.

"It is still possible to identify varieties in this section by the amount of foliage on the trees and the size of crop. Arranged in order of foliation, they run Hiley and Early Hiley, Uneeda, Elberta, Early Rose, Red Bird, Mayflower. Elberta and Early Rose have about the same amount of foliage but the former bloomed early, and in most orchards were caught by freezes, while the latter bloomed late and usually have a heavy set.

"Uneeda trees bloomed late, set a crop, and are foliating almost as well as Hiley. Mayflower trees in this section of the State last year had ripe fruit on the 16th of May, but at present they have very little foliage and a heavy set of peaches about the size of hickory nuts. As anticipated, the ripening seasons of the various varieties will be much out of order. The Georgia Peach Growers Exchange's latest estimates of the State's peach crop this year is one-third of the normal amount and about 3,500 cars. With the exception of 1932, this will be the smallest crop in 21 years."

He had written May 3d: "In an Elberta orchard about 10 miles south of Fort Valley, four trees were noted on each of which one of the three or four main limbs possessed normal, fully developed foliage, while the other limbs on the trees had only a few leaves, most of the growing points being less than one inch long and comparable to the other trees in the orchard.

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, (continued)

"The limbs were marked and the orchard mapped for further observation and identification. If they prove to be true Elberta and resistant to prolonged dormancy, they may be of considerable value. The set of fruit on the foliated limbs was light, as was the set on the remainder of the orchard, but the peaches were larger and more uniform in size."

R. B. Wilcox, Pemberton, N. J.

Writing from the Cranberry and Blueberry Disease Laboratory on April 30th he says:

"The winter flowage was drawn on the 20th from a number of bogs of the Early Black variety, where reservoirs were available for frost protection. Growth has not yet started on these bogs. Some of the older vines are in rather poor condition but most of the young bogs look well. The water will not be drawn from most of the cranberry acreage until May 10th, and some will be held a few days later than this. Some bogs show an unusually heavy coating of algae over the vines; however this is not as general as we had feared.

"Boards were removed from the lower gate of our seedling bog on the 28th. Because of the heavy rains just preceeding, however, the water did not go out as fast as expected. The coating of algae on the seedling bog is very much lighter than last year and will not give us any great trouble. As soon as the ground is dry enough a rototiller will be run over the lower portion of the bog in preparation for the planting of new seedlings."

POTATO INVESTIGATIONS

C. F. Clark, Presque Isle, Me.

"Potato planting is well under way in this section," he writes May 15th.

"The weather has been comparatively warm with little rain during the past three weeks. These favorable conditions have enabled the growers to start farming operations somewhat earlier than usual. Field work is suspended today, however, as the result of a snowstorm last night.

"The potato seedlings in the greenhouse have been potted. The number of plants transplanted was 10,129."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"From observations this territory is believed to have one of the biggest blooms seen for several years," he writes from the U. S. Pecan Field Station and Laboratory on May 8th.

"Many varieties are not yet showing pistillate blooms in a receptive condition and with most varieties through shedding pollen there may be a heavy drop of pistillate flowers due to lack of fertilization. Pollen is shedding about the same time this year as last but the pistillate flowers are about two weeks later in reaching a similar stage of development."

He had written earlier: "The topworking of trees by the inlay bark grafting method was completed late in April. This work included the placing of several scion varieties on different stock varieties weekly for three weeks. Some of the buds on the first scions set were beginning to grow and most of them were looking well at the end of April. Pear scions set by the cleft graft and chestnut scions by the inlay bark graft were also looking well, with only a very small percentage of the latter showing no shoots.

"The conditions in the pecan orchards this year appear to be sufficiently out of the ordinary to give us cause for worry in planning our work. Most of the trees had a decided yellow cast the middle of April and by April 24th Moore pollen was shedding very rapidly."

Paul W. Miller, Corvallis, Oreg.

"A record of disease development on tagged filbert shoots on certain trees in the college orchard at Corvallis, Oreg. was again taken during the latter part of the week," he writes May 8th. "A large number of additional new infections were found. It is of interest to note that a number of blighted buds and young shoots were found in certain trees from which all detectable sources of infection were cut out during the forepart of September, 1936. The results of this experiment would seem to indicate that excision, of itself, can not be relied upon to control filbert blight.

"Up to the present, no blighted shoots are visible in the plots sprayed with bordeaux mixture 4-4-50 in (1) late summer and (2) early spring."

NUT INVESTIGATIONS

Alton H. Finch, Tucson, Ariz.

"There has been a uniformly good blossoming of pecans in Arizona this year and barring an unusually heavy 'May drop' there will be the largest crop in the history of the State," he predicts May 15th. "This is because the bulk of the acreage will be of an age to bear its first commercial crop.

"The 'May drop' of young nutlets has been a serious problem on some varieties, especially the Burkett, which is probably more widely planted than any other. The peak of the drop usually comes through the first few days of May and a slow continued dropping occurs to about the fifth of June, after which all nuts remain on the trees to harvest.

"The peak of the drop is now passed. The extent of the gradual dropping for the rest of the month will determine the size of the crop this year.

"On May 2d a visit was made to the orchard of Mr. Walter Moore at Florence, Ariz. This orchard is located in the Gila Valley where pecan trees have uniformly failed because of rosette. It was planted in 1930, and information on the nature of rosette was gained in 1932, when the trees were beginning to be badly affected.

"Treatment of trees in this orchard has been remarkably successful. The trees are uniformly thrifty and have borne good crops. There is an excellent blossoming this year and barring a heavy 'May drop' there will be an excellent crop."

Milo N. Wood, Sacramento, Calif.

"Brown rot has been exceedingly bad on almonds this year, in fact much worse than I have ever seen it before," he reports May 1. "In some orchards trees are so bad that the foliage looks as if it had been scorced by fire.

"Dichogamy has been rather pronounced in some orchards, although during the latter part of the bloom of some of the varieties in the valley the weather has been such that the catkins were held back on protandrous varieties to a certain extent, therefore the lap over of the period of bloom of catkins and pistils may be somewhat greater than was at first anticipated. Nevertheless, it appears that dichogamous conditions will reduce the yields in many unpollinated orchards."

U.S.HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

J. M. Lutz (Fruit and vegetable storage and utilization investigations)

"Examination of grape juice made of various varieties of grapes grown at the station was made during the week," he reports for the week ending May 1.

"It is interesting to note that most of the unsweetened grape juices from these varieties have a higher sugar content than commercial pure juice with added sugar. The Lenoir variety which seems to be very productive in this section, yields a juice which is exceptionally fine flavored and which retains the flavor after dilution. Storage of juice at 32° F. resulted in slightly better quality than storage at higher temperatures."

ADMINISTRATIVE NOTES

SPECULATION BY EMPLOYEES IN STOCKS OR BONDS OR COMMODITIES IS CONTRARY TO GOVERNMENT POLICY

Personnel Circular No. 44 of May 8, 1937, points out that all officials and employees of the Department, whether under competitive Civil Service or not, are to be informed that speculation on their part or in their behalf in corporate stocks or bonds or in commodities is contrary to government policy.

This, of course, is in accordance with letter of April 22, 1937, from the President to the Civil Service Commission. The President said:

> "I believe it to be a sound policy of the Government that no officer or employee shall participate directly or indirectly in any transaction concerning the purchase or sale of corporate stocks or bonds or of commodities for speculative purposes. Engagement in such speculative activities by any officer or employee, whether under the competitive civil service or not, should be among the matters considered by the heads of departments and establishments and by the Commission in passing upon questions concerning his qualifications for retention or advancement."

This should be called to the attention of all employees for their information and guidance.

ADMINISTRATIVE NOTES

Temporary Employment Furloughed Employees — The Acting Comptroller General in an opinion dated April 23, 1937 (A-82335) indicates that the dual compensation statues do not preclude an employee from occupying a temporary position during the same period that he is on involuntary furlough without pay from a permanent status either in the same or different department or establishment of the Government.

"The requirement for administrative furlough," says Personnel Circular No. 43 of the Department, dated May 7th, "either pursuant to the statutory provisions since repealed, or because of a deficiency in appropriated funds, is tantamount to the abolishment of the position from which an employee is furloughed for the salary of which there are no funds available. It was indicated in the decision that while the employee may be regarded as remaining on the rolls in the sense of retaining a permanent eligibility for reemployment, he does not actually hold two positions within the meaning of the dual employment statutes during the period of the involuntary furlough. This rule is not applicable during periods of voluntary furlough or leave or absence without pay when funds remain available for payment of the salary of the permanent position.

"If an employee on involuntary furlough is subject to the Civil Service Retirement Act and that employee is given a temporary position in the same or different Department, retirement deductions must be taken from his pay while he is occupying the temporary position."

Exchanging Used Parts — Congress has definitely authorized (Act of April 15, 1937) the exchange of used parts of certain types of equipment for new or reconditioned parts of the same equipment. The authority provides:

"That any Government department is authorized to exchange used parts of mechanical refrigerators, hermetically sealed refrigerating units, temperature control devices, and watchmen's clocks as payment in full or in part for new or reconditioned parts to be used for the same purpose as those proposed to be exchanged."

There has been some doubt as to whether items of this sort could be legally exchanged or used in payment for new or reconditioned parts. The Department Regulations provide for certain types of exchanges, of course, and this supplemental authority removes doubt concerning the handling of such matters. If there is still some question in your mind concerning such exchanges that you are considering, be sure to ask the Business Office about it before going ahead with the deal.

ADMINISTRATIVE NOTES

Traveling Expenses, Leave of Absence, etc. Annual leave, except as to time of taking, being an absolute right under the Act of March 14, 1936, says a recent decision by the Comptroller's Office, an employee directed, while on leave, to perform temporary duty at a place other than his regular duty station and permitted to return to the place where he was on leave to resume his vacation, is entitled to reimbursement of the authorized expenses of the travel involved, but if his leave status is terminated at the completion of the temporary duty and he is required to return to his regular duty station, he may be allowed only such travel expenses as represent the difference between cost of return to official headquarters via temporary place of duty and cost of direct return from place where he was on leave.

An employee on leave of absence under the Act of March 14, 1936, who, while on leave, performs temporary duty en route to his regular duty station, is entitled to per diem in lieu of subsistence for the period of temporary duty but not to transportation from place of temporary duty to official station

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Metered Payments Attention is called to an Act, approved April 27, 1937, which reads as follows: "Be it enacted by the Senate and House of Representatives of the United States of American In Congress Assembled, That hereafter, in making payments for commodities or services, the quantity of which is determined by metered readings, such as gas, electricity, water, steam, and the like, where the period covered by the charge begins in one fiscal year or allotment period and ends in another, the entire amount of the payment may be regarded as a charge against the appropriation of allotment current at the end of such period.

Publications-- and Manuscripts Remember--the original and one carbon copy of manuscripts for publication in the Department series must be sent to Dr. Auchter; and the original and two carbon copies of manuscripts intended for outside publication.

It is especially important that the original be sent along at once to spare the reviewing officers and editors the necessity of reading the sometimes pale and incomplete carbon copies. Failure to send in the original manuscript may make it necessary to retype the paper here--or send it back to the author for typing, with consequent delay in publication.

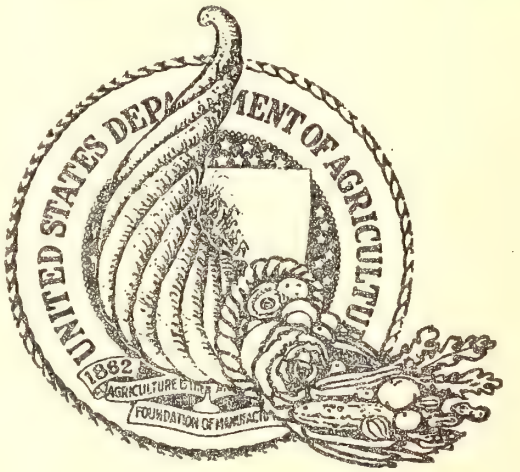
All manuscripts, of course, are to be sent through your Section Leader for transmittal by him to Dr. Auchter.

Vol. 9 No. 11 June 1, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D.C., June 15, 1937 No. 12

Sweetpotato Breeding at Beltsville. The obtaining of high-quality market varieties of sweetpotatoes that are resistant to disease has been an objective of the Division for a good many years, and a number of interesting stocks have been on hand for sometime. A slight deficiency in attractiveness or appearance of some of these sorts is the only thing that hasprevented their general acceptance since they are highly disease-resistant, high-yielding, and of good quality. Some of the State stations, as well as ourselves, are particularly interested in obtaining disease-resistant sorts for market purposes or in obtaining earlier varieties that will permit the extension of commercial production farther northward. A multi-station and Division cooperation is in effect for the purpose of accomplishing these ends. More recently the development by the Bureau of Chemistry and Soils of commercially feasible methods of producing high quality starch from sweetpotatoes has added another reason for pushing sweetpotato breeding work. The object here is, of course, to obtain disease-resistant, high-yielding sweetpotatoes of high starch content. Appearance and eating quality in these varieties are not important.

For some years efforts have been made to obtain seeds of controlled crosses of the sweetpotato from the Tropics. In past years our cooperators in the Tropics have been unsuccessful in obtaining such crosses, but have supplied a limited quantity of open-pollinated seed. To date about 65 seedlings have been produced, grown vegetatively for two years and vegetative material of the more promising ones distributed to cooperators. A few of these are of particular interest for starch manufacture on account of their pure white flesh, high yield, or other characters. About a hundred more seedlings are now being propagated for cuttings preparatory to going to the field for the first time. All of the seedlings produced to date are from open-pollinated seed.

VEGETABLE INVESTIGATIONS

Just recently we received from Mr. Wallace K. Bailey, associate physiologist at the Federal Experiment Station, Mayaguez, Puerto Rico, seeds of a large number of controlled crosses made as desired by this Division between varieties sent him from here. So far as is known, this is the first time that the Division has been able to obtain seeds of definitely known controlled crosses between superior varieties, made for a specific purpose, and especial credit is due Mr. Bailey for his excellent work in this connection. He has also sent us a supply of open-pollinated seeds of known female parentage.

The seeds of the controlled crosses will all be promptly planted this summer in the greenhouse. Cuttings will be made during the fall and winter to develop a small supply of each seedling so that at least a 50-foot plot of each can be planted in the spring of 1938. Later in the summer or fall considerable quantities of open-pollinated seed will be planted in the greenhouse for the production of smaller quantities of cuttings for the first field planting of the open-pollinated material.

Dr. J. H. Beaumont, principal horticulturist, at the University of Hawaii, has also recently supplied us with a generous quantity of open-pollinated seed of Hawaiian varieties. The spring of 1938 should see several hundred new seedlings under observation at Beltsville. As rapidly as stocks of vegetative propagated material can be developed, the seedlings will be sent to all cooperating agencies interested in the sweetpotato breeding problem.

About 150 seedlings will be grown in the field at Beltsville this year. These, together with our varieties and other sweetpotato tests, are being transplanted to the field at the present time and it is expected that planting will be completed before the middle of June.

All new varieties and seedlings obtained at the Beltsville station are subjected by Dr. L. L. Harter to severe disease tests under carefully controlled conditions. There is particular interest in fusarium resistance. It is intended that the relative fusarium resistance shall be known of all seedlings and varieties before they are sent to cooperating agencies.

All comparisons of named varieties and of the more promising seedlings are conducted in modified Latin-square field arrangements.

Dr. C. E. Steinbauer and Mr. J. H. Beattie are in charge of the work at Beltsville and cooperative tests are in progress within the Division and with various experiment stations as follows: At Meridian, Miss. with George P. Hoffmann; at Laurel, Miss. with W. S. Anderson of the Mississippi Experiment Station; at Ames, Iowa, with A. T. Erwin of the Iowa Experiment Station; and at Florence, S. Car., with J. B. Edmond and others of the South Carolina Experiment Station.

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

Protection of Apples and Pears in Transit. Technical Bulletin No. 550, "Protection of Apples and Pears in Transit from the Pacific Northwest During the Winter Months," by E. D. Mallison, E. A. Gorman, Jr. and W. V. Hukill, summarizes the results of 35 transportation tests, using 217 cars, over a period of 14 shipping seasons under varying weather conditions from the Pacific Northwest to eastern destinations, in cooperation with shippers and fruit growers.

In addition, two stationary tests were made, one at Roseville, Calif., and the other at Havre, Mont.

The 37 tests involved experimental work with different types of heaters, methods of lighting and extinguishing heaters, various heating systems, methods of protection without heaters, ventilation, forced air circulation, refrigeration and prewarming of cars. The studies in general show the need for improvement in methods and have indicated some of the ways by which needed improvements may be brought about. In particular, the favorable results obtained from the use of inside control justify the recommendation of the general principle of protection upon which this method is based, the details of application and servicing, of course, being left to be worked out by each carrier to suit its own conditions.

The bulletin contains a very interesting discussion of the use of latent heat of fusion of water, a method of protection, not previously used, that was tried in several different tests to avoid the need for heater service. In this method shavings or sawdust are saturated with water and placed under the floor racks in such a way that there is a small air channel left under the rack and over the wet sawdust. The purpose of the method is not to add insulation to the floor but to make use of the latent heat of fusion of the absorbed water when it freezes. This is comparable to, although the exact reverse of, the use of ice for refrigeration!

In the case of refrigeration the melting ice absorbs heat from its surroundings, whereas with wet sawdust or shavings the freezing of the water releases heat to its surroundings. The water in the sawdust freezes at a temperature of 32°F., but the freezing temperature of the fruit is 3° to 4° lower. This makes it possible for the water to freeze first and release its heat before the temperature is low enough to damage the fruit.

Dry insulating materials, such as sawdust, shavings, straw, or paper around the load, which have been used with shipments during the winter months, not only did not give satisfactory protection against freezing but actually increased the hazards of freezing because they blocked the air channels and prevented air circulation.

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

Ventilation is not required with shipments of apples and pears coming from cold storage during the period when Carriers' Protective Service is available. With such fruit desirable temperatures can be better maintained by keeping the ventilators closed.

None of the methods of heating refrigerator cars by means of heaters in the bunkers that depend on the distribution of heat upon the natural circulation of air alone maintained uniform temperatures throughout the load.

The use of wind-activated fans to increase the circulation of air served to create more nearly uniform temperature conditions in the car and reduced by several degrees the difference between the temperature in the top and the bottom of the load and between the ends of the car.

"Inside control," mentioned briefly and favorably above, is a coined term used to designate a method of lighting and extinguishing car heaters according to the need for heat as determined by the temperature of the air at a critical point within the loading space of the car, while under Carriers' Protective Service the heaters and ventilators are operated according to outside temperatures. It takes little imagination to realize the results of operating the heaters and ventilators of a passenger train at division points on the basis of outside weather conditions at division points rather than the comfort of the passengers, or by the operation of the heating systems in the home according to the outside temperature.

The differences in the (1) thickness of insulation and efficiency of the refrigerator cars, (2) rate of burning of the charcoal heaters, (3) average temperature of the fruit at time of loading, and (4) weather conditions en route makes it necessary to handle each car individually in accordance with its need for protection.

In the experiments with inside control, charcoal heaters, thermostatically controlled alcohol heaters placed in the bunkers, and thermostatically controlled gas heaters which circulated a heated solution through pipes under the floor racks were used. The release of heat under the floor racks as from pipes, gave the most satisfactory results.

The purpose of inside control is to add only the minimum amount of heat required for the maintenance of temperatures as close as possible to the optimum for fruit storage. The temperature of the air inside the car may be determined by means of a distance-reading thermometer or a thermostat activating an electric light, or some other device. These instruments may be mounted at some convenient position so that they can be easily read without opening the car.

DECIDUOUS FRUIT INVESTIGATIONS

One of the new publications coming from the press during the month is Circular No. 426, "Use of Soil-Moisture and Fruit-Growth Records for Checking Irrigation Practices in Citrus Orchards." It was prepared by C. A. Taylor of the Division of Irrigation, Bureau of Agricultural Engineering, and J. R. Furr of our Division.

"Soil-moisture determinations have been used in checking the needs of citrus trees for irrigation more, perhaps, than with any other crop," it says. "Various methods and a variety of equipment are used. This circular is intended to serve as a guide to citrus orchardists who desire to effect a more accurate control of soil moisture. It describes experiments showing that the growth rate of fruit used in conjunction with soil-moisture determinations provides a more accurate index of the need of the trees for moisture than does soil sampling alone."

The equipment and procedure for making fruit-growth measurements and the application of the results are described in 23 pages of text with 14 figures and 3 tables.

"Citrus growers will find both soil-moisture and fruit-growth records useful in checking up on irrigation practices," say the authors in summarizing the results of their work. "During the principal irrigation season from June to October, fruit-growth records serve as a valuable guide in determining the effectiveness of irrigation. Fruit-growth and soil-moisture conditions may be correlated during this period and the extent and depth of the root zone established.

"Soil samples taken in the zones of soil most thoroughly permeated by feeder roots will give the first indication that the supply of readily available moisture is becoming exhausted. A general inspection of the orchard soil will then show the extent to which the soil is dry and what penetration should be secured when water is applied. Each furrow or border check may be probed while the water is on the land to determine whether the desired penetration is being obtained.

"Fruit measurements taken before and after irrigation will indicate, by the relative rate of apparent growth, whether or not there was any unusual stress for water in the tree at the time of irrigation. From these growth records, it may be determined whether the interval between irrigations is satisfactory.

"The necessary equipment for the average orchard is not expensive nor is the procedure difficult. The grower will be well repaid for the time and effort expended on both soil-moisture tests and fruit measurements. With a season's record before him the grower may decide what modifications are necessary in order to improve his irrigation program."

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"The weather has been characterized by abnormally low seasonal temperatures and a succession of days with wind," he writes May 29th.

"On very few days have maximum temperatures gone above 80°F., with day temperatures mostly reaching maxima between 70° and 80°, and night temperatures usually approaching 40°. While this has not been advantageous for codling moth emergenc, the great amount of wind has caused the weather to be even less advantageous for codling moth sprays. Many orchardists have not yet completed their first cover sprays. One Chelan orchardist last night advised that he had not yet finished his calyx spray.....

"The long period of bloom and continuing cool weather resulted in the early fertilization of the 'king' blossom and subsequent fruit growth, while the late bloom was fertilized a week or ten days later. Unusual unevenness of fruit sizes now is apparent. Fruits from some of the later bloom are about 1/3 the size of the king-bloom fruits."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"The local Strawberry Growers Association reports that the equivalent of between four and five cars of strawberries have been shipped in truck lots by the association during the week," he reports May 22d. "The price has ranged from $4.25 to $4.35 per crate."

He has written May 15th: "A number of items of phytopathological interest should be recorded: Bacterium pruni spots on cultivated plum leaves were observed on May 13, as well as mildew spots on seedling peaches. Several specimens of Physalospora obtusa on apple leaves were received for identification and one peach grower brought specimens of arsenical injury on peach leaves for identification.

"A letter and specimens received from Augusta, Ark. indicate that blossom blight is very severe in the Early Wheeler plantings in that section. According to the statements in the letter, blossom blight has reduced the crop from 10,000 to 2,000 bushels. There are 400 acres planted with Early Wheeler trees and blossom blight is reported to be serious in all the orchards."

DECIDUOUS FRUIT INVESTIGATIONS

W. W. Aldrich, Medford, Oreg.

"Initial fruit set of Anjou varies widely, for adjacent trees or for adjacent scaffold limbs," he reports from the U. S. Pear Field Station May 17th. "In general fruit set is greater on the south and west sides than on the north side of the tree. Medium-pruned trees now have from 5 to 14 fruits per 100 blossoms, which is about 'average' for Anjou at this time. Heavy-pruned trees (with about half as many blossoms as medium-pruned trees) have about 33 fruits per 100 blossoms. I am still convinced that this greater percentage set of fruit which the heavier pruning is largely the result of increased water per blossom on trees with water supply to blossoms a limiting factor. Apparently pear trees in general, regardless of soil type or amount of soil moisture, have water as a limiting factor during and following full bloom.

"However, I am wondering whether nitrogen or carbohydrates may not become limiting factors after the initial set of small fruits, to cause or contribute to the ensuing drop of small fruits. It already appears that the drop will be heavier (as in previous years) on the heavier pruned Anjou trees, which now have more fruits and less leaf area than the medium-pruned trees.... With the 8- to 10-day delay in full bloom as compared with last year, plus the cool weather following full bloom, it now seems that the 1937 season is fully 14 days behind the 1936 season, which was about 'normal.'"

Elmer Snyder, Fresno, Calif.

"During the past 10 days most of the vinifera grape varieties have been in the process of blossoming at the Fresno Experiment Vineyard," he writes May 22. "Combined with later growth starting and cooler than normal temperatures, the grape varieties blossomed a week to 10 days later than the average of previous seasons. Grape crosses were made during this period comprising 27 different crosses of more than 5,000 emasculated blossoms. A number of varieties were also self-pollinated.

"Approximately 3,000 seedlings of previous crosses were checked for blossom characters. An interesting phase of the study was the appearance this season of several seedlings of Russian vinifera varieties producing typical male blossoms. These blossoms had strongly developed stamens while the pistil existed only as abortive ovary with no style or stigma present, and consequently no setting of fruit. This is the first season that such male blossoms have been observed in any of the vinifera seedlings. Such blossoms are quite typical in many of our native species and hybrids of native species which are used as resistant root stocks.... Pollen was collected from a number of vinifera varieties for use in eastern grape breeding work."

DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley, Wenatchee, Wash.

"There is a considerable amount of winter injury showing up in the entire Wenatchee Valley," he writes May 25th. "There appears to be less root injury than I had anticipated last fall when the soil was none too wet when the extreme cold weather struck it. Most of the injury is on aerial portions and it ranges from small scattered branches to entire leaders or in some cases the whole tree has been killed. This injury presents a very fine example of the relation of vigor in the tree to susceptibility to injury. Trees that were vigorous and well taken care of and pruned after the cold weather, show little or no injury but trees that were lacking in vigor in most cases have suffered considerably. This winter injury also shows up the effects of fall pruning. Trees that were in good vigor last year but pruned early in the fall are badly winter-injured. This is manifested by a killing back of the branches from the pruning cuts. Rather large branches that were stubbed back last fall are invariably injured or entirely dead now. Unfortunately this is what happened in the Newtown orchard where we had been conducting our physiological studies on fruit bud formation. We succeeded in getting all of our blossom records this spring but it does not look as though this orchard will be suitable for further studies this year.

"Yesterday I examined an orchard that was both low in vigor and pruned the latter part of last October. This orchard now looks like a total loss for almost every tree shows serious winter killing. There seems to be little exception as to the geographic distribution of this injury. Rock Island and East Wenatchee districts are hit rather severely, also the Wenatchee district proper, and Cashmere-Dryden areas. I have not examined the trees in the Okanogan sections but it has been reported by several that the injury in general is quite severe.

"Due to rather poor pollination weather and subsequent long blooming period we are having a rather difficult time to organize our thinning program. In the first place, we can only estimate the approximate full bloom date and that seems to have covered several days. Also the weather is so ununiform that the set of fruits varies greatly. At the present time, which is approximately 16 days from full bloom, as we have estimated it, some of the fruits are large enough to thin, while others are hardly more than blossoms recently set."

G. A. Meckstroth, Willard, N.C.

"The peak of the 1937 strawberry season at the Wallace market was reached May 17, when 15,087 24-quart crates were shipped by truck and 14 cars by rail. The price has been good throughout the season up to about a week ago," he writes May 22. "During the past week prices have ranged from about $1.25 to $2.10 for Missionaries and from $1.75 to $2.75 for Blakemores. Growers will not continue to pick much longer at such prices. The fields are getting dry, resulting in reduced size of berries. The heaviest picking on the Station plots was obtained on May 17."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"Present prospects are for a large crop of fruit, including blueberries," he writes from the Cranberry and Blueberry Disease Laboratory on May 31. "There were numerous showers, most of them rather local, and no long wet period to interfere seriously with blueberry pollination.

"Because of the late spring frost in 1936, many cranberry growers held the flood water on their bogs this year until May 15th, and a number of them held it until the 20th. We have not yet seen any cases of damage from this holding. The water has now been drawn from all bogs except where it is to be held until July.

"The coating of algae was heavy on some bogs when the water was drawn, while on others it was found to be lighter than usual. We have had an opportunity to observe the effectiveness of several different treatments for the control of algae. It will be remembered that the millpond bog at Double Trouble was drawn on March 21st and sprayed with copper sulphate on the two following days, after which the bog was again covered with water. On April 13th, the water was lowered so that we could examine the sprayed part as well as a small area which had been left unsprayed as a check. There was no question that the algae had been almost completely destroyed on the sprayed part; in no place were there filaments from one leaf or upright to another. On the unsprayed area, however, the growth was very heavy. The flood water wasfinally removed from this bog on May 12th, more than seven weeks after the application of copper sulphate. There was a new growth of algae over the sprayed part so that there was no appreciable difference between the sprayed and unsprayed areas. In other words, the spray had been effective but not for the full length of time that the water remained on the bog. It is felt that other and cheaper means of applying the copper will be more practicable."

He had written May 15th: "The early blueberries are at about the heights of their bloom and all varieties have blossoms open. Although most fields have been intelligently pruned and 'tipped back' the bloom is very heavy; the good balance between the flowers and leaves indicates that the bushes should be able to bear well, and barring frost should give the heaviest crop of cultivated blueberries on record. The application of blueberry fertilizer has begun on certain fields. In most places the fertilizer will be divided into two, and sometimes three, applications, at intervals of three or four weeks.

ADMINISTRATIVE NOTES

Reprints Desired. Dr. Auchter would like to have members of the staff send him for his files copies (reprints, separates, etc.) of any papers relating to the Division's work that they may have printed in outside journals.

NUT INVESTIGATIONS

B. G. Sitton, Shreveport, La.

"A visit was made to the Chase orchard near Keatchie," he writes from the U. S. Pecan Field Station on May 17th. "A big production of this orchard has been entirely defoliated by the Maybeetle so that the trees appear almost as bare of foliage as in the winter time. The trees damaged were in plots which have not been cultivated for the past two or three years. Those parts of the orchard which have been kept cultivated had little or no damage except on those trees on the outside rows of the cultivated area. I would estimate that at least 100 to 150 acres of trees have been thus damaged.

"Even on the cultivated area the pistillate flowers are very scarce so that apparently there will be a very light crop of pecans produced in this orchard this season. In the old cultural-fertility block there is still evidence of holdover effects of the fertilizer and cover crop of three years previous. The check row and the low nitrogen row show weak yellow foliage, whereas the trees receiving more nitrogen and those trees on land having had a good cover crop turned under have foliage of excellent color and a fair crop of pistillate flowers."

Max B. Hardy, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on May 22d he says:

"Temperatures during the week were high and only one small shower of rain occurred--on Wednesday evening. As a result most soils are getting very dry and some summer cover crops are suffering. Unless rain occurs shortly our crotalaria will be gone as many plants are already dead. This condition has occurred each year for the past three years, especially on the lighter soils. During this same period of time the use of winter cover crops has been much more satisfactory."

ADMINISTRATIVE NOTE

Foreign Travel. The Comptroller General's office has recently stated that paragraph 17 of the Standardized Government Travel Regulations, as amended, approved by the President January 30, 1934, and December 10, 1935, would not appear to contemplate the mandatory use of transportation requests in foreign ports, either for travel between such ports on vessels of American registry or vessels of foreign registry having ports in the United States, or for travel on vessels of American registry between a foreign port and a port in the United States, where the cost to the United States of the transportation, if so obtained, would be in excess of the cost of procurement by payment in foreign currency.

ADMINISTRATIVE NOTES

Picnic The summer boarder was registering a complaint. "Gosh, but it's hot here," he said. "What about that nip in the air at sundown you advertised?" The landlord spread out his hands. "Well, it's the truth, ain't it?" he demanded. "Look at them mosquitoes."

There wasn't a nip in the air, not even by mosquitoes, but every one certainly had a "hot time" at the annual Division picnic June 5th at the U. S. Horticultural Field Station, Beltsville, Md. from 2 p.m. onward. The heat caused a suspension of most of the athletic activities featuring former picnics so far as the girls were concerned, but the men went ahead to prove they were of much sterner stuff!

The softball game attracted most attention, with the Washington team squeezing out a 11 to 10 victory (according to the scorer) over the Beltsville outfit. The heroes of the contest, however, were supplied by the losing team. Dr. Karl Hamner not only played a whale of a game in the field, shutting off one sure hit by a great running catch, but accomplished something a lot of us have failed on when he put one past Dr. Auchter--yes, socked a home run over the Doctor's head and into the next county. Dr. Hamner received brilliant support from Dr. Batjer.

To add insult to injury, the Newcomers' Club went on to take the horseshoe pitching laurels, with Drs. Parker and Borthwick trimming Mr. Moon and Dr. Cullinan.

A natural history trip and a wading party sponsored and led by Dr. Auchter met with high--and hilarious--approval, respectively. Incidentally, Dr. Auchter retained his dish washing and drying championship for the simple reason that paper cups and dishes were in order everywhere at the picnic this year. There is a suspicion that this change was made by Carl Schoenhals, who was a rather pathetic figure with real dishes, though he boasts that he hasn't broken a paper plate for ten years.

Mary Fowler, too, retained a championship won last year, as no one appeared to challenge her right to the top rank among the rolling pin tossers.

Last--but first--the hospitality committee took first honors in interior decorating. We missed Mr. Gould, who couldn't make the trip this year, but somebody made away with his portions of the strawberries and ice cream, lemonade and coffee, without difficulty. The havoc wrought by the softball players was especially noticeable.

These picnics are proving immensely popular and are looked forward to with enthusiam; while the Beltsville station offers an unusually attractive and convenient location for the outings.

--Wayne Guernsey

ADMINISTRATIVE NOTES

Auto travel We have a little problem in connection with the attempt to combine rail and auto travel on the same trip. The use of your own auto is permitted, of course, when authorized in advance on the basis that it is more economical and advantageous to the Government. But don't try to get away with the proposition urged by one employee who wanted an authorization covering travel by train and then added the request for permission to use his auto on the ground that it had been determined that the latter was the more economical way of traveling, etc. If so, inquired the Powers-that-Be, then no travel by train should be performed, as it is always the duty of the employee to travel by the most economical and advantageous route?

The solution lies in outlining in advance those portions of your trip that may be performed most economically, etc. by auto, and supporting the request for its use with reasons. We can't secure authority for you to use both train and auto without establishing with respect to the portion of the trip to be made in the auto that it will be more economical than train transportation.

Auto travel: Headquarters In a recent ruling the Comptroller General's office has stated: "The words 'but in no case shall a place within 2 miles of a traveler's office or living quarters be considered as away from his post of duty,' as used in paragraph 3 of the Standardized Government Travel Regulations, are for application irrespective of where the corporate limits of a city or town may be, but where the place visited on official business is more than two miles from the traveler's office or living quarters, mileage may be paid for the use of his personally-owned automobile for the distance traveled beyond the corporate limits, notwithstanding such limits are closer than two miles to his office or living quarters."

Roundtrip Tickets. Sure, you know that through tickets, excursion tickets, and roundtrip tickets (or party tickets) should be secured whenever practicable or economical. It has probably cost you money to learn this. But did you know this: Ignorance of the law is no excuse and so on? In other words, the Comptroller says that it isn't enough to have a ticket agent inform you that there is no reduced ticket available--you must look up the matter yourself to make sure he is right. It cost one of the Department's workers $12.50 to find out that he shouldn't have relied upon the word of a certain ticket agent he consulted in connection with his trip.

ADMINISTRATIVE NOTES

Short-term Rental Agreements — Inasmuch as the beginning of a new fiscal year is approaching, a careful check should be made of your requirements and short term rental agreements obtained for all services other than personal, such as experimental plots, garage space, laundry, ice, etc., that will extend regularly over a period of more than six months. Where the annual rental exceeds the rate of $50.00, however, competition must be obtained.

Telephone Contracts — In renewing telephone contracts for the fiscal year beginning July 1, 1937 (fiscal year 1938), you are instructed to take up with the telephone companies the matter of entering into the new contracts for an indefinite period, thus eliminating the necessity for executing new contracts every year. At the same time, the directory listings should be checked and corrected where necessary. All field telephones are required to be listed under the official designation of the field station, and additional listings under the names of individuals are properly chargeable to the individuals concerned.

If you have not received forms and instructions for securing the new short-term rental agreements and telephone contracts, Mr. Gillette will supply them on request.

Freight Express — A recent experience of the War Department serves to emphasize the importance of checking all freight and express shipments carefully to make certain that the number of packages, weight, etc. corresponds with the listing on the bill of lading. Where a difference is found, our Business Office should be notified at once.

In the case referred to, the carrier had received a shipment weighing 10,600 pounds which was listed at $1.98 per 100 pounds on the basis of the carload rate and minimum weight at 12,000 pounds.

When delivery was made, however, it was found that one box weighing 180 pounds had been omitted. The carrier claimed full payment, however, insisting the minimum weight charge applied even with the 180 box overlooked. War Department auditors, however, deducted $4.01 for the box. The carrier had presented a bill for $237.60 on the 12,000 pound basis and the deduction was figured as 180-10660 of $237.60.

The Comptroller General's office has upheld the action of the War Department.

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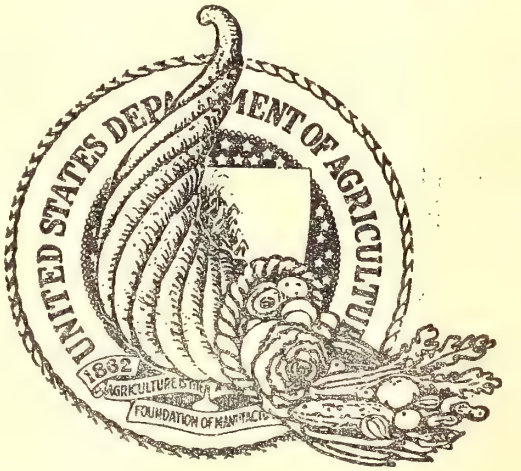
THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., July 1, 1937 No. 13

Celery Mosaic

Remember the interest Dr. F. L. Wellman aroused at the meetings of the American Association for the Advancement of Science back in December, 1931, when he announced, in effect, that spraying and other similar measures must take a back seat when celery mosaic was the disease that the Florida growers were battling?

He went on to explain that this mosaic could be controlled economically by eradication of the Wandering Jew, which instead of wandering, has a tendency to make its home in Florida celery fields. This Wandering Jew is a host for the celery mosaic from which the disease is passed along by the common aphid (Aphis gossypii) which attacks cotton and melons in the South. This aphid is called the "celery aphid" in the Florida celery districts.

In his experimental plots, Dr. Wellman had been able to reduce the amount of infection from 60 percent to as little as 6 percent merely by eradicating the Wandering Jew. By getting rid of it there was no source of infection except such diseased plants as might be in the field, and so by reducing the amount of disease to a minimum the spread of mosaic could be eliminated to all practical purposes.

Celery mosaic was first described in Florida in 1924, but it was known even before that time. The experimental work Dr. Wellman reported on in 1931 had been started the winter of 1929-30. The final results of his studies on the control of this celery mosaic are now reported in Technical Bulletin No. 548, "Control of Southern Celery Mosaic in Florida by Removing Weeds that Serve as Sources of Mosaic Infection."

DECIDUOUS FRUIT INVESTIGATIONS

W. W. Aldrich, Medford, Oreg.

"Blight infections in 'late bloom' of Bartlett have become serious in practically all orchards, with frequently as many as 50 or 75 infections per tree," he reports June 7th. "At the Medford Experiment Station one man-hour per tree was required to cut out infections on the first time over the trees. Control is not yet complete....

"Since experienced blight men cut at least 10 to 12 inches below surface indications of blight, it is evident that the removal of this blight will also remove a large number of fruits and will probably reduce the potential Bartlett pear crop for this season.

"Daily stomatal opening of Anjou in some of the top-root ratio plots was rechecked. It was again found that root removal reduced the daily period of stomatal opening, and late pruning increasod it."

He had written May 31st: "After a light rain on the 25th there followed two warm days. While Saturday was cool and Sunday morning had a minimum temperature of 30°F. (31° or below for 1-1/2 hours), the following day brought a resumption of warm weather. Although it is generally believed here that cool weather favors blight development and hot weather checks it, I am not convinced. F. C. Reimer tells me that blight cankers were slow to become active (ooze) this spring, which was relatively cool. If warm weather continues, I shall be interested to determine whether blight becomes worse, for there are a large number of infections throughout the Valley. To a great extent these infections occur on 'late bloom', which was unusually heavy this season...."

"There is more spraying for blight here this season than has occurred for 6 or 7 years," he comments in his report of May 24th. "Bordeaux (1-2-50 or 1-4-50) or Coposil has been used, either as a 'pink' spray according to F. C. Reimer's recommendation, or as a 'full bloom' spray according to Placerville (California) recommendations. A large number of trials with checks, using several types of sprays, have been made by Mr. H. Van Hoevenburg in his own orchard, which was about 60 percent destroyed by blight in 1936. These trials, being watched by many field men and growers, should give some indication of the most effective time for application, at least for this season.

"Grim and I have continued our study of top-root ratio in relation to water supply to the leaves. Where top-root ratio was decreased by dormant pruning, this year's data substantiates that for other years in showing that heavy pruning resulted in less water loss from leaves during the day, and also in a longer daily period of stomatal opening. These data substantiate Dr. Chandler's original theory that a large part of the stimulation from dormant pruning was the result of increased water supply to the remaining growing points."

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"Early Rose harvest is beginning this week in this section," he writes June 14th. "Ample rainfall has occurred in most orchards to provide ideal growing conditions, though not enough to make brown rot a serious problem. However, bacteriosis has developed rapidly in many Early Rose and Elberta orchards on leaves and fruit, in both the Fort Valley and Thomaston areas. In the last few years bacteriosis had been light or absent on Early Rose, and this year serious infection was not anticipated. In the less vigorous sections of the orchards, where bacteriosis is most severe, the reduction in marketability of the fruit will cause considerable loss."

He had written May 24th: "The first shipment of peaches from Fort Valley this season was made on Saturday, May 22, two half bushels of Mayflower.

"On May 24th I made a trip to several orchards near Woodbury, Ga. where considerable winter injury was being experienced. In one orchard of 3,000 Early Rose, about 600 replants were made each year. In another orchard of Elberta, trees obtained from two different nurserymen, one block had a number of winter injured trees, while the other had practically none, suggesting a stock influence. Replants in the first block were not doing well, but every one dug up was feeding one or more borers. One grower had planted last year a solid block of 3,000 Hale trees. He was advised to bud some of the trees to another variety which would pollinate the Hale trees.

"Soil moisture under the 'dry' tree is now down to a point close to where the wilting percentage of this soil is judged to be. Ample moisture is present in the second foot of soil, while the third foot remains unchanged. The fruits have not yet started the final period of rapid growth."

C. O. Hesse, Davis, Calif.

Writing on May 22d, he said: "The apricot deal is just starting in the Winters section, although it will be a few days, probably a week to 10 days, before any considerable amount of fruit is moved.

"Three boxes of Wiggin's Seedlings were shipped from the Winters section the latter part of the week. This is the earliest variety. While the season is very late this year, it seems that the difference in maturing date of the varieties commonly grown in this section will be more noticeable than in previous years. The Stewart, Derby, and Royal varieties are very distinctly in different stages of maturity, and will ripen in the order named."

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, Amherst, Mass.

"Further cultures of blueberry material from diseased plants have been made," he writes from the Cranberry Disease Field Laboratory at East Wareham on June 5th. "The disease which causes dying of new shoots and flower clusters is quite prevalent on some varieties of blueberries at the State Bog but has not been observed on any of the varieties on the grounds of the Massachusetts State College at Amherst. "Alternaria is the only organism which has been isolated consistently from diseased plants from Amherst.

"Cranberries are making rapid growth. A few blossoms are beginning to appear on a few of the bogs from which the water was taken off early. Rosebloom is worse than usual this year and on a few bogs is very abundant."

R. B. Wilcox, Pemberton, N. J.

Writing from the Cranberry and Blueberry Disease Laboratory on June 15th, he says: "Mr. Bain arrived with a truckload of cranberry seedlings June 4th and remained until they were all planted on the 9th. There is considerable work to do on the bog to free it from weeds, but if the weeds are brought under control during the next two weeks, it should not be difficult to keep them down during the rest of the summer.

"There has been a rather heavy drop of blueberry fruit during the last two weeks so that prospects are for a much more moderate-sized crop than was anticipated earlier in the season. The drop was confined mostly to certain varieties, the Pioneer being the worst affected. The crop of Rancocas seems to be exceptionally good, Cabot is fair and Rubel is variable. Mr. H. B. Scammell, who is a very close observer, blames the drop entirely on poor pollination; it was his observation that the blooming period of Pioneer reached its peak during cool damp days when there were very few bees at work. This is the most plausible explanation for the drop that we have yet had."

HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"The week has been cool with plenty of moisture, climaxed by a snow fall the morning of the 4th, several inches whitening the ground although not all was recorded in the rain gauge as a north wind carried it along," says the report of June 6th. "The snow was general throughout Wyoming, Montana, western Dakotas and Nebraska, ranging from an inch at Laramie to 18 inches in the Bighorns. The Cheyenne Weather Bureau states that 8 inches fell here June 4, 1892, and 7 inches June 7, 1889. The window boxes at the station were covered with burlap against the low temperature the 4th and 5th and it is believed there was little damage to any of the newly set vegetable plots."

DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"Following our method developed for 'Hastening the Production of Fruit in Grape Hybridizing Work' buds have been taken from this season's grape seedlings and budded into vigorous shoots of vines growing in vineyard form," he writes June 12th. "During the past several weeks more than 1,000 buds were inserted. Such buds inserted on May 17th had produced some shoots over 4 inches long by June 12th, with possibilities of fruit production during the 1938 season.

"Various types of green budding and grafting have been studied and made to obtain a quick reading of some grape mutation selections.

"Local field trips were made to check commercial test blocks of stocks growing in nematode and phylloxera infested soils. One commercial block consists of 90 acres of the stock, Solonis x Othello No. 1613, grafted to Emperor grapes, with an adjoining plot of 70 acres of the ungrafted stock. Solonis x Othello No. 1613 cuttings planted in vineyard form and place-budded on August 1936 with Emperor are now showing growth of more than 6 feet.

"A test block of Dog Ridge, Salt Creek, and Solonis x Othello, No. 1613 which was planted and grafted to Maraville de Malaga in 1934, is making fine growth and shows very little apparent difference in growth on the different stocks at this time. This plot is established in nematode infested soil where several plantings of vinifera vines on their own roots failed on account of nematode injury."

C. P. Harley, Wenatchee, Wash.

"The 'one man's meat is another man's poison' was certainly the case among the farmers in North Central Washington during the past week," he writes June 19th.

"With over an inch of rainfall since June 14th, the cherry growers are sad, whereas the wheat growers in the Big Bend country have all gone out on a spree. Bings and Royal Ann cherries have suffered considerably from cracking; Lamberts are not affected. A few Bing trees that I examined showed approximately 30 percent of the fruit cracked. Since that time we have had more rain and this percentage probably has increased. This precipitation took on the aspects of a cloudburst in certain localized areas, in a few spots accompanied by hail.

"This heavy rainfall, on the other hand, practically insures the wheat growers of the Big Bend a bumper crop. This is the second year of good production for them."

POTATO INVESTIGATIONS

W. C. Edmundson, Greeley, Colo.

"The weather during the past week has been very cold, with some snow and rain," he writes June 9th. "On June 4th, .46 of an inch of rain fell at the station. Friday night the temperature at the station dropped to 33°F.

"In the Platte river bottom east and south of Greeley, the thermometer reached 28°F., killing hundreds of acres of pinto beans, also cucumbers, cantaloup, squash, pumpkins and peppers. Some tomatoes were also killed. In the southern part of the county the damage to truck and canning crops was much more general. It is reported that hundreds of acres of pinto beans are being replanted throughout the Greeley district. Some fields escaped with only partial loss, while others were completely killed. The Gilcrest and LaSalle early potato area reports that many of the potato fields received a severe set-back as a result of the last frost. Potato growers of the district are busy planting the late crop. Owing to the recent rain, the soil is in excellent condition for planting and a good germination is expected.

"We are well along with planting our potatoes at the station, but will probably not complete our planting operations until the middle of next week."

C. F. Clark, Presque Isle, Me.

"We finished planting the experimental plots last week after several delays due to frequent rains," he reports June 12th. "While the greater part of the commercial acreage in this section has been planted, there are many fields on which the planting is not yet completed. A recent report indicates that the total acreage planted will be approximately the same as that of last year."

NUT INVESTIGATIONS

F. N. Dodge, Robson, La.

"Dry weights have been determined on all winter cover crops," he writes from the pecan field station June 7th. "Abruzzi Rye cut March 13 yielded 4,817 pounds of dry material per acre, while winter legume cut May 27 yielded 4,905. Winter legume cut April 12-14 yielded 3,976 and that cut February 15, in preparation for breaking the land for cotton, 1,280 pounds of dry weight per acre. It is apparent that turning under the winter legume cover crop so early is not the best practice as regards the yield of cover crop; yet that is the practice of the cotton planters in this section in working the heavy land."

NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"In the trips around this week, we have seen the shortest prune crop we have ever seen," he writes June 12th. "They say in other sections that they have a fair crop, but we saw orchards that would not run a box to the acre. The cherry crop in some sections is almost a total failure, while in other places it is fairly good. The berry crop was forced into ripening by very warm weather and now it is very nearly the end of the season for strawberries.

"Walnut orchards on the whole look very good. The killing that occurred during the freeze of 1935 especially has resulted in fewer growing points. This year those few growing points are making exceptionally good, vigorous growth. In one orchard near Roseburg we saw one of the heaviest walnut crops we have ever noted. Other growers are also reporting heavy crops. Of course this may be reduced by the blight infection development during this rainy period--the weather has been cold and rainy, beginning June 8th."

Paul W. Miller, Corvallis, Oreg.

"Results of studies on the relative amount of foliage injury caused from prebloom applications of bordeaux mixture containing varying amounts of copper sulphate and lime were taken during the week," he reports for the week ending June 12th. "In experiments carried on in a Franquette planting near Aumsville, Oreg., the most severe foliage injury occurred in the plot sprayed with bordeaux 4-4-50 closely followed by the 2-2-50 bordeaux plot. The plots sprayed with bordeaux 2-1-50 contained the least amount of foliage injury. The addition of a light medium mineral spray oil at the rate of one pint of oil to 100 gallons of spray reduced the amount of injury to a mere trace. No detectable foliage injury occurred in the plots sprayed with red oxide of copper 1/2# to 50 and 1# to 50, respectively."

John R. Cole, Albany, Ga.

"Scab infection counts on the nuts indicate that we are getting excellent control of this disease by spraying," he writes June 12th. "For instance on the unsprayed checks, 4 percent on the 3-1-50 bordeaux plots and 3 percent on the 3-3-50. Both received the prepollination spray, consisting of 2-1/2-50 bordeaux mixture.

"Scab infection varies considerably in different localities on the same varieties. In the Champion orchard about 4 miles west of Albany the scab infection is so heavy that trees have been defoliating for several weeks. Other trees that have had similar treatment in the same locality have light infections of the disease. A very similar condition exists from Camilla to Fort Valley.... Good rains have recently fallen and the trees that have been well cared for are in excellent condition."

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"It appears that our hybrid almond trees have an excellent crop," he writes June 7th. "The work this season will be very heavy on the almond breeding project.

"The general almond crop promises to be good in the coastal valleys from Santa Clara Valley southward. Almond orchards in the Salinas Valley will produce very heavy crops. The Paso Robles district will have the largest crop in years. The smaller areas in Ventura, Los Angeles and San Diego counties will produce good crops. The Banning section in southern California will have a good crop although not quite as heavy as in some years. Orchards in the San Joaquin Valley are spotted as to crops but will average well. While the previous estimate of about half a crop for the Sacramento Valley is probably correct, heavier crops in the almond districts elsewhere will probably bring the average up to twice that of last year, or possibly even more. If the quality turns out to be good, the prospects for the State will be very satisfactory. In general, almond orchards are in much better condition than last year. This is especially noticeable in non-irrigated orchards.

"From what I have seen the average walnut crop for the State will be very heavy this year.

"Special attention has been given to the trial plantings of the two new almond creations we have designated as 8-31 and 8-32. These were planted on various rootstocks and showed considerable variation. On the whole, however, trees have been very thrifty and while most of them are too young to produce crops as yet, some of the trees planted 3 years ago were apparently setting heavy crops of nuts. In one orchard where the trees were on good irrigated soil, they looked much better and were setting much more of a crop than other commercial varieties of the same age. Even under some adverse conditions the hybrid trees seemed to be growing better than regular commercial trees of the same age, although they were smaller in size than those grown under better conditions. Both 8-31 and 8-32 seem to produce very heavy foliage and at this time of year the color of the leaves was very good."

C. L. Smith, Austin, Tex.

"From all indications the pecan blooming will be very heavy in most localities this year," he wrote early in May. "In a few orchards that I have observed where there was a fairly heavy crop last year the blooming is only average, but for most native trees the blooming is heavy." On May 29th he added: "Further reports from various sections of the State indicate a heavy bloom of pecans and it begins to look like a big crop for this year unless insects or seasonal conditions interfere."

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

Apples A failure to handle apples in the proper manner caused a whole lot of trouble for a couple in a famous garden and orchard some years ago. In fact it is rather generally believed that the descendants of this couple still suffer for the blunders of Adam and Eve in connection with apple handling.

However that may be, we know that the apple and problems in connection with its efficient handling and use are still with us, so we hasten to extend a warm welcome to Technical Bulletin No. 559, "Influence of Packing and Handling Methods on Condition of Apples Barreled for Export," prepared by Paul L. Harding, J. M. Lutz and Dean H. Rose of our Division.

Barreled apples from the United States often reach European markets, for example, in unsatisfactory condition. Slackness of pack is probably the most serious defect. Reports of from 4 to 6 inches of slackness are not infrequent and on rare occasions barrels have arrived at European markets only a little over half full. Since the discount occasioned by this slackness will range anywhere from 25 cents to as much as $2.00 or more a barrel, it means that in years of large shipments American growers may lose as much as $200,000 by reason of this slackness of pack.

The chief object of the investigations, covering the 4 years 1931-34, was to test thoroughly various methods of packing apples in barrels and devise a method that will insure against slackness of pack with a minimum amount of injured fruit. The 25 pages of text, 9 tables and 7 figures in the bulletin point the way to a decided improvement in the situation.

A summary of results of the study shows that in general shaking the barrels two or three times while they are being filled, racking 15 times when the barrels are nearly full, with the plug, or follower, in place, and filling to about three-fourths of an inch above the top of the staves was sufficient to prevent appreciable settling of the apples in transit. Racking with the plug, or follower, in place is very effective in settling apples in the barrel, thus preventing slackness due to subsequent settling, although some shaking also is necessary.

If heavier shaking or racking is practiced it is well to decrease the height of the pack to prevent excessive bruising and skin breaks. Filling the barrels more than three-fourths of an inch above the tops of the staves causes an undue amount of bruising and skin breaks and resulting decay, especially when such shaking and racking as recommended above have been given.

Overfilling does not replace adequate shaking and racking in the prevention of slackness.

ADMINISTRATIVE NOTES

Transportation to Temporary station. To be, or not to be--that is the question? Whether the expense for transportation between one's place of abode, if any, and temporary place of duty is to be charged to subsistence (per diem allowance) or figured as a part of the transportation charges? Thus conscience doth make cowards of us all, except the Comptroller General's office, which passes the buck right back to the traveler.

If the situation is one that involves duty at a station where workers usually pay their own transportation from home to work, you have an item that belongs in the per diem allowance. But if workers are customarily transported free from their homes to the place of work then, maybe, the charge is a proper one against transportation. You can try it, anyway.

The question came up in connection with the travel of employees between their place of abode and an airport at which they were working temporarily. It appears that there is free bus service for passengers from town to the airport; and this bus also takes out free the permanent airport workers. Others have to pay.

Of course it is another of those cases emphasizing the necessity of submitted explanatory statements to justify any unusual expenditures. Most of the difficulty we have with vouchers is caused by the fact that they are not self-explanatory and it is not clearly shown why the expenditure was made, etc.

Bear in mind constantly that your vouchers are audited by workers who are not familiar with your work, or the conditions under which you work. Explain the items clearly enough to be understood by these outsiders and you will have little trouble.

Automobile Repair parts Contracts are now in effect covering the purchase of repair parts for most automobiles, including the purchase of Ford reconditioned motors. A recent decision of the Comptroller General's office points out that it is not necessary to advertise for repair parts, etc., while these contracts are in effect, as the advertisement of the Procurement Division (Treasury Department) in obtaining bids is considered sufficient competition.

This means that the trade-in values of used motors exchanged in part payment for reconditioned ones is readily ascertainable. If you do not happen to know the figures, or the discounts offered for repair parts under the contracts, our Business Office can give you the information readily.

ADMINISTRATIVE NOTES

Auto Reports — Employees who have government-owned passenger carrying automobiles in their possession are reminded that the Division's annual report to the Chief of Bureau on such vehicles must be submitted as promptly as possible after July 1. In order that this report may not be delayed, it will be appreciated if reports for June--and for other months for which reports have not yet been submitted--are submitted at the earliest possible date.

Aerial Photos — Remember that in any case where it is necessary or desirable to obtain aerial photographs or aerial maps (photographic), the matter must be taken up with the Washington office. Special regulations are in force and specifications available covering work of this type.

Travel By air — "Did you have any difficulty making yourself understood while you were in France?" a friend inquired of the investigator who was just back from a trip abroad. "Not a bit," he replied. "You see, I didn't try to speak French." If I could get in touch with him I'd let him explain this matter of figuring salary saved in connection with travel by air. Such travel may be approved, of course, where the cost (less subsistence and salary of the traveler saved by the faster trip) does not exceed the cost of rail or steamer transportation, plus Pullman fares.

Salary saved? Yes, there's the rub! It means salary saved for your Uncle Samuel. In other words, the man who took an airplane and reached Washington, D. C. at 1:30 p.m. on May 29th, to find the Department closed over Decoration Day and who, in consequence, was not able to report for duty until the morning of June 1, is going to be shocked when the auditors, checking over his travel account, inform him that he really didn't save any official time (salary) by the faster trip!

In another case recently the Comptroller General's office ruled that salary equivalent of the time saved by officers or employees traveling to temporary duty stations by air may be applied to the excess cost of such travel only where the earlier arrival to the temporary duty station results in an earlier return to actual duty at the permanent station. The amount for application, too, may not exceed the amount of salary represented by the additional duty time at the permanent station by reason of the earlier return.

Air travel, that is, is another of those propositions requiring clear explanations as to the need and economy of its use. Unless care is used it may prove to be a case of--not more haste, less speed--but more haste, less money--the technical word being "disallowance," I believe.

ADMINISTRATIVE NOTES

Safety First! The Procurement Division of the Treasury Department has worked out specifications that promote the personal safety of workmen and the public in connection with the prosecution of projects involving the construction, alteration, or repair, including demolition or painting and decorating, of any public building, or for the prosecution of any public work, within the geographical limits of the United States and its territories and possession. These safeguards will be included in all specifications prepared by the Procurement Division.

Since all construction work for our Division must be handled through our Business Office here (or else!), Roy Gillette will take care of these new requirements in preparing bids. The matter is bought up here merely to show you how much interest we take in keeping you in good health and repair while you are with us. Afterwards, of course, you will be on your own!

Advance Sick Leave In the matter of physical disability, the question of advance sick leave should be handled with care. It can be obtained, but only for reasons that are watertight. Advance sick leave, that is, is to be discouraged except as provided in the Regulations--to take care of serious disability. In every case where such advance leave is applied for, the request must be accompanied by a certificate from the attending physician explaining the nature of the illness and giving some estimate as to the time probably needed for the employee's recovery. The application will then be forwarded through the usual channels for consideration. If not approved the absence will have to be charged to annual leave or leave without pay.

Gasoline and Oil In general rulings handed down by the Comptroller General's office recently in connection with Government contracts for gasoline and oil, it has been declared that where an oil company contracts to furnish a Government agency gasoline and oil at its service stations, and then by reason of a State chain store tax, or otherwise, leases part or all of its stations to individual dealers, payment may be made to the contractor for gasoline and oil furnished by such dealers on credit cards issued by the contractor.

Where an oil company contracts to furnish a Government agency gasoline and oil at its service stations under contract provisions which, reasonably interpreted, would require the furnishing of the stipulated services at all stations operated by it at the time such services are required, but would not require the maintenance of service stations for that purpose, the contractor is not liable for any excess cost of gasoline and oil otherwise procured by the United States because the contractor has disposed of a part or all of its service stations without making provision for the furnishing of the contract service elsewhere.

ADMINISTRATIVE NOTES

Tolls--and the San Francisco-Oakland bridge

We trust you will not think we are inebriated by the exuberance of our own verbosity when we refer again to the matter of NOT paying tolls in crossing the new San Francisco-Oakland bridge. As it happens, one of our men reports that the collector refused to permit him to cross the bridge, regulations or no regulations, unless he paid the toll. The Division of Accounts advises that in such cases a receipt must be secured for the charge and the claim submitted in a separate account since it will have to be sent to the General Accounting Office for preaudit, which will delay payment two months or so. By all means get this receipt as the Comptroller General's office has definitely ruled that we cannot pay the toll charges on this bridge--but by having the receipt the amount paid can be charged back to the bridge officials. See?

The point is that the consent of Congress for the construction of this bridge was granted by an act approved February 20, 1931 (46 Stats. 1192-1193) which provides that permission for the bridge to cross the Government reservation on Goat (Yerba Buena) Island should first be obtained from the Secretaries of War, Navy and Commerce. This joint permit, dated January 6, 1932, and accepted by the State of California, provides:

> "Free passage over the bridge shall on proper identification be granted at all times to military, naval, or civilian personnel of the United States, resident, regularly employed or having Government business on the island or points which may be reached via said bridge, and to their dependents; and in like manner for passenger and freight vehicles belonging to or operated by or in behalf of the United States or the individuals mentioned."

There is nothing indefinite about this, but where you must either pay or go back home, you may as well take a chance--but get the receipt or you will most assuredly be the Yerba Buena (Goat).

Ocean Travel

Perhaps you've heard of the traveler who, often bothered by seasickness, thought he'd be smart and bolt down his meals. It didn't work--they got loose anyway. But the Comptroller General's office has bolted down the appropriation to which steamer tickets are to be charged by ruling that the cost of steamship transportation furnished on transportation requests hereafter will be charged to the appropriation current at the date the vessel sails, irrespective of when the ticket was actually purchased. This action has been taken in view of the frequent necessity for making reservations far in advance for steamship travel, which might result in charging the prior fiscal year appropriation for the cost of transportation which under no conditions could have been performed in that fiscal year.

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THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., July 15, 1937 No. 14

Tomato Breeding At Beltsville. In early April some hundreds of Lycopersicon esculentum x L. pimpinellifolium crosses and back-crosses completed the season's fruiting in the greenhouse and were removed to make way for the growing of plants to be set in the field. About 40,000 seedlings involving numerous carefully inbred lines of several commercial varieties and of L. pimpinellifolium, together with progenies of several different combinations of crosses and successive back-crosses among these, were included. Lines of L. pimpinellifolium have been isolated that are apparently immune to fusarium wilt and highly resistant to a number of leaf diseases. Efforts are being made to incorporate the disease-resistance of these lines with the desirable commercial characteristics of some of our best varieties, particularly Globe and Marglobe. Continued back-crossing to the large-fruited parent is resulting in a reasonably rapid restoration of fruit size. It is hoped that out of a field of 40,000 plants this season at least one or a few worthwhile segregates may be isolated.

Crosses have been made only between parental stocks carefully inbred for several generations. Crosses and back-crosses have been made reciprocally and the practical breeding work is planned in such a way that the experimental material and data obtained should reveal definite facts concerning the inheritance of specific characters, particularly disease-resistance. A small four-acre field of fairly uniform soil character has been so effectively inoculated artificially with a virulent strain of fusarium wilt that known susceptible strains have been killed 100 percent every year that they have been grown on this field. The varieties and breeding lines of particular interest are grown on this heavily-infested field in a modified Latin square arrangement. The planting of all field plots of tomatoes was completed about May 25, and good rains subsequently gave prospects of excellent stands and a satisfactory crop.

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"Early Hiley harvest was begun the latter part of the week in this section. As expected many of the fruits have split because of the large size and rapid growth of the peaches due to the small crop," he writes from the U. S. Horticultural Field Laboratory on June 21. "The season of ripening is a few days later than last year in spite of the fact that the variety began blooming the middle of January and continued blooming until the middle of March, six weeks earlier than usual. The explanation probably lies in the fact that the freeze of March 16 killed most of the advanced fruits and blooms on Early Hiley, only the retarded blooms surviving. The harvest of the Early Rose variety, which bloomed this year about April 1, is extending into the Early Hiley season. From ripening data of the varieties at Beltsville, normally about 10 days to 2 weeks should intervene between the harvest of the two varieties. However, the departure from the normal ripening period is not as great as the time of bloom would indicate.

"The few growers in this section who have kept their Golden Jubilee trees are well satisfied this year, for the variety, having a high cold requirement, bloomed late, escaped the freezes, and set a crop. This year these fruits do not have the usual flat-sided shape, and the specimens I have seen resemble very closely those grown at Beltsville last year. Ice cream manufac turers are among the buyers of Golden Jubilee fruit."

He had written June 7th: "Uneeda harvest is now getting under way in this section with the heaviest crop in most orchards of all of the varieties. This variety's cold requirement prevented its blooming as early as Hiley and Elberta, which were caught by freezes, and yet there was sufficient cold for it to foliate almost normally and produce a crop. However, Uneeda trees constitute only about 10 percent of the commercial peach plantings in south Georgia."

C. F. Kinman, Sacramento, Calif.

"A part of last week was spent in studying the avocado situation in southern California," he writes June 22d. "Among the important effects of the severe freeze of last winter that injured most avocado orchards in that region is that many growers are turning from varieties of questionable merit to the variety Fuerte which is recognized as the most satisfactory variety for most localities. While the cold weather did serious damage to most nursery and orchard plantings, Fuerte orchard trees of bearing age have made rapid recovery. Most other varieties excepting those of the Mexican type still show severe injury in many localities. I was again impressed, as I have been on a number of occasions since I have been out here, that low winter temperatures are the most serious hazard to avocado growing in California and that only cold-hardy trees should be planted and the most favorable orchard sites selected."

DECIDUOUS FRUIT INVESTIGATIONS

W. W. Aldrich, Medford, Oreg.

"The weather has remained very cool, with almost continuous clouds and frequent light showers," he writes from the U. S. Pear Field Station on June 21. "This is popularly supposed to be 'bad' blight weather, favoring blight extension in limbs. The rate of blight extension here is not known, but it does not appear that infections have spread with any great rapidity.

"The number of infections in Bartlett and also in Anjou is very great. The County Blight Inspector informed me this season blight is more serious here than in any year since 1927. Most observers testify that nearly all infections occurred in 'late' or 'second bloom', which appeared about May 10 to 20. This blight infection can not yet be said to be under control, since many growers have not completed inspection of all trees once. Thus far this blight has probably reduced potential Bartlett crop from 20 to 25 percent and reduced Anjou crop from 5 to 10 percent. Bosc still shows only scattered infections. Other varieties have very little.

"The cutting out of blight infected limbs in experimental plots completely demoralized our research program. Where possible Grim and I completed final fruit counts just ahead of blight crews.

"In soil moisture plots there does not seem to be any relation between growth conditions and number of blight infections. In Moderate, Old Frequent and half of Frequent Late cutting of blight infected limbs removed from 25 to 35 percent of the fruits. Fortunately, we had not planned to determine total leaf area, as in previous 5 years. In some plots there are now not 10 fruits (for weekly measurement) within reach of the ground.

"The drop of Anjou has continued for trees with heavy pruning (trees had higher initial set of fruit), leaving most Anjou trees, regardless of soil type, with a medium to light crop."

He had written June 14th: "Over 1.5 inches of rain fell during the week. Although this addition to available soil moisture will be of benefit to general farming and to some of the dry-land pear blocks, the detrimental effects to the pear industry as a whole are undoubtedly serious. Growers believe the cool weather has favored blight extension in limbs. This may or may not be true, but the rainy weather has delayed blight cutting and facilitated transmission of bacteria from places of infection to root-suckers. The rain has also reduced the arsenate of lead covering at a period just preceding the hatching of codling moth larvae from the peak flights of the first brood.

DECIDUOUS FRUIT INVESTIGATIONS

W. W. Aldrich (continued)

"I have yet to learn of a Bartlett stock without a serious blight infection. Fortunately Bosc has to date shown only scattered infections. Since there have not been enough men to cut out blight in Bartlett as fast as it has shown up, the blight in that variety must be considered still ' out of control.' If weather conditions during the next week or so should favor blight extension in limbs, blight in Bartlett in this district will be very serious. With the cessation of high school, many boys are being trained and are thereby appreciably adding to the man-power."

He wrote June 28th: "After cloudy, cool weather for two more days, the skies cleared to give moderately warm days. But this district continues to be the 'Valley of the Gray Smokes', because every afternoon from 10 to 30 columns of smoke, from burning piles of blighted limbs, can be seen from almost any spot. However, in most orchards all trees have been examined at least once. From now on blight infections should be rapidly brought under control."

J. B. Kienholz, Hood River, Oreg.

"Prospects for a heavy pear crop have been materially reduced," he reported June 10th. "An examination of orchards in the lower valley during the week disclosed that a heavy drop has occurred and the remaining pears in about half of the Lower Valley show from 5 to 80 percent frost russet and ringing. The fruit quality, naturally, will be inferior to most years.

"A cloudburst descended in part of the Parkdale area accompanied by some hail. One and one-half inches of rain fell in one hour in one orchard, and soil erosion was serious. Hail injury to young fruits is quite common. Generally, however, the Upper Valley shows promise of a good pear crop.

"Many specimens of all fruit trees are being brought in regularly which show the condition termed 'dieback'. Pear trees up to 7-8 years of age seemed to have suffered most. This condition can be attributed to the dry fall season last year and lack of later irrigation, coupled with freezing injury before the moisture content of the soil was restored. The extremely hot weather (90°F.) following a few days after our freezing weather of May 3-5 probably is responsible for several unusual and vague physiological disorders appearing at this time.

"Pear scab was late in showing a build-up and it seems possible this was due to our freezing weather also...."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg. (continued)

"An almost continuous rain has fallen, starting June 13 and ending June 20," he reports under date of June 20th. "Practically no air movement accompanied this fall. A total of 3.06 inches accumulated during this period and 3.27 inches for the month so far.

"Royal Ann and Bing cherries began splitting about the second day and at the present time are nearly a total loss in the lower valley. Lamberts, which showed no color, began splitting toward the end of the period and considerable reduction will occur in this variety also. At The Dalles where seasonal conditions were somewhat advanced, the cherry crop will not be picked, due to splitting. Further east, near cloudbursts and cyclones occurred and considerable destruction of farm buildings and vegetation resulted. A 70-mile gale was reported at Pasco and Kennewick, Wash. The precipitation occurred at a timely period for the wheat growers, however, and grain prospects are reported very favorable.

"Strawberries were just coming into the peak of ripeness in the lower valley during this period and production was rapidly lowered due to almost impossible picking conditions and moldy berries. A few growers picked during the rain rather than lose their crop, but naturally the returns to them were inferior to the fair prices offered this season.

"It is anticipated that a further reduction in our modest pear crop will result, especially in those orchards where a start of pear scab was already noticed. It will be interesting to observe the spread of the fungus from these rains. Since no wind was present it is believed new infections will be largely limited to individual orchards."

H. F. Bergman, East Wareham, Mass.

Writing from the Cranberry Disease Field Laboratory of June 26th he says: "Blueberry fruits are becoming quite large and will begin to ripen in two to three weeks. On occasional branches, or sometimes on an entire bush, the berries fail to increase in size. This, I think, is cold injury to the buds due to the very warm weather during January and February with very much colder weather in March. Mummy berry is showing up to a very considerable extent on a few varieties, more than has occurred for several years in the past. Present indications, however, are that the crop will be large.

"We have this week continued spraying experimental cranberry plots. Two series of plots on the State Bog, and some six plots on a small bog near here have been sprayed."

PEACH MOSAIC

A new virus disease of peach trees, similar to peach yellows in its contagious nature, rapidity of spread, and menace to the commercial peach industry, was discovered in 1931, and at present is known to occur in Texas, Colorado, California, Utah, New Mexico and Arizona. The natural vector of the disease, presumably an insect, has not been determined. The infective virus is not spread from diseased to healthy trees by irrigation water, pruning implements or other mechanical contacts; and is not communicated through the agency of the soil. Replanting after the removal of affected trees may be made with safety at any time. In the spring newly formed leaves on trees affected with the disease present prominent areas in which the natural green of the leaf is mottled with yellow. Because this type of mottling is distinct from leaf characters associated with other diseases of the peach, the new disease has been named peach mosaic.

An account of peach mosaic--discovery, infectious nature, classification, distribution, identification and control measures--is given in U. S. Department of Agriculture Circular No. 427, "Peach Mosaic, Its Identification and Control," by Dr. Lee M. Hutchins of our Division; E. W. Bodine, associate botanist, botanical section, Colorado Agricultural Experiment Station; and H. H. Thornberry, formerly junior plant pathologist, Citrus Experiment Station and Graduate School of Tropical Agriculture, University of California. Although the authors worked independently--Hutchins in Texas, Bodine in Colorado, and Thornberry in California--they kept in close touch and compared symptoms of the disease over the areas where it was known to occur. William F. Turner, in charge of field work on phony peach eradication in Texas, had called the new disease to Dr. Hutchins' attention in July, 1931.

It has long been known, of course, that the control of virus diseases of the peach may be accomplished by eradication. The most devastating outbreaks of peach yellows, peach rosette, little peach, red suture, and phony peach have yielded to immediate removal and destruction of all visibly diseased trees when performed concurrently with frequent, efficient, and well-timed inspection of orchards, home plantings, nurseries, and trees escaped from cultivation. As soon as it was known that peach mosaic is caused by a virus, eradication was recommended as the only effective means of control. Surveys and eradication are now in progress in several districts where this disease occurs. In Colorado, outstanding results have already been achieved. Cultural practices, fertilizers, orchard sprays, or injection of chemicals into the trees have not been effective for control of peach mosaic.

Under favorable conditions for its spread, peach mosaic is one of the most contagious of the peach virus diseases. From its first appearance in a few trees in an orchard, and in the absence of effective control measures, the commercial value of an entire planting may be destroyed within 3 to 6 years and rapid spread over a large peach-producing area may take place.

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

J. M. Lutz (Fruit and vegetable storage and utilization investigations)

"Tomato shipments continued heavy from Crystal Springs," says the report for the week ending June 12th. "About 900 cars were shipped. Prices have been fairly good. Weather has been dry and hot in the Crystal Springs area. Blossom end rot is proving to be very serious this year, many fields showing 50 percent of the fruit thus affected."

N. H. Loomis (Small fruit investigations)

"During the week the 'bunchgrape' vineyard was again sprayed with a 3-3-50 bordeaux plus nicotine sulphate for aphis control. The rainy weather the past two weeks has produced an ideal condition for the development of black rot, and consequently it is quite severe on the more susceptible varieties, especially Ellen Scott.

"Downy mildew is severe on the Goethe variety. Practically all the varieties in the vineyard are loaded with fruit, but outstanding varietal differences in the fullness of the clusters, size of fruit, and vigor of the vine are noticeable."

Atherton C. Gossard (Nut investigations).

"An interesting item noticed on the trip to the Mississippi River pecan growing sections will bear mentioning: Mr. Clyde McGehee, who has removed a number of trees from one of his pecan orchards in which he is increasing distances between the trees, was told by some friend that if he would paint the stumps with creosote he would not be bothered with suckers growing from them. He did this and has had almost no sucker growth from the old stumps. This may prove to be a simple way of controlling sucker growth from stumps when thinning stands of pecan trees."

U. S. HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"The iris are at their best now, a brave display from the office to the greenhouse, attracting many visitors," says the station report for the week ending June 26th.

"The peonies are coming into bloom. The rain on the 25th was the best of the season--a slow, steady drizzle that continued to fall well into the night."

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS.

J. R. Winston, Orlando, Fla. Year's best fish story!

"When a man on official duty falls from a ladder, it's an accident and he can get compensation," writes J. R. pathetically to Roy Gillette. "If a man on official duty on travel status gets a cinder in his eye, it's an accident and he collects compensation. When a fish bone lodges in the throat of an employee at dinner while he is on official duty away from his official station, is that a compensatable accident, an act of God, or just downright hard luck?

"Dr. Harding and I left early this morning for Cocoa to gather samples of fruit. While eating dinner in Cocoa a mullet bone lodged in my throat and the service of two doctors was necessary to remove it. Cocoa is in Brevard County and our State legislature has deemed that a mullet in Brevard County is not a fish since it has a gizzard, and because of this fact there is no closed season for catching mullet. Hence it might be incorrect for us to refer to the mullet bone as a fish bone. At any rate, we rushed to the doctor in Cocoa who labored long and hard, but was unable to remove said bone. He charged only half price because he freely confessed he could do no good. He then advised that we return to Orlando for immediate treatment. This was done and after due form and ceremony and much gagging, the bone was removed.

"The mullet dinner cost 40 cents but removal of the trimmings cost $4.00. There were plenty of witnesses to the episode from beginning to end. I was in such agony and so anxious to be relieved of this recently acquired rib that I paid cash for the veterinary and medical service. Is there any possibility of receiving a refund of the charges for the medical service rendered?"

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"But, gosh, Roy," I protested, "you can't pass that. Eating dinner--that wasn't work for the Department of Agriculture--it was purely in the interests of the Interior Department."

"Oh, that's all right," argued Roy; "though it might be figured that since J. R. is a field man we wouldn't be responsible for accidents happening while he was engaged on--er--inside work. Let's see that calendar."

"Calendar?" I asked, handing it to him.

"Sure," said Roy. "You know as well as I do that the Comptroller General's office, or the General Accounting Office, or both, would want J. R. to explain why he was eating fish at all--if June 25th wasn't a Friday." He looked at the calendar. "No, he's all right on that--June 25 was a Friday."

So it goes, day after day. You can see for yourself the tough problems the Business Office has to handle. Be patient with the boys and girls!

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"On June 23, Dr. Gerhardt and the writer were in Yakima to review conditions respecting the projected cherry transportation test," he writes for the June 1-26 period.

"Fourteen cars of cherries had been shipped from the lower valley. There was a prospect that 40 or 50 cars might be shipped out of a 350-car crop. The splitting of cherries following the continued rains was so severe that many crops of Bing cherries will not be picked. The transportation test was abandoned as no carlots will be forwarded by freight. The Lewiston cherry crop is reported a total loss.

"The situation in Wenatchee is also bad. There is a good demand for maraschino type cherries and 'brining' is being done at the American Fruit Growers and Valley Evaporating plants. Although this applies largely to the Royal Ann variety, Bings which have not advanced too far in color are now being processed. Five cents per pound is the price being paid for No. 1 Bings and 7 cents for Royal Ann cherries.

"The only warm weather had this season was during the first week of June. Following that period, a succession of low barometric formations came in from the Gulf of Alaska and resulted in cool showery weather, interspersed with heavy rains. The weather did not clear up until June 22, after which bright warm days prevailed."

ADMINISTRATIVE NOTE

Vouchers Attention is called to the fact that vouchers are being received by the Division of Disbursement (Treasury) on which name of payee is not given in complete form. This applies especially to vouchers payable to a corporation or bank. For example, a voucher may be made in favor of the National Bank and Savings Company with no indication as to the name of the city.

In order that the Division of Disbursement may be fully protected in drawing checks it is requested that vouchers show the name of the payee in such a manner that when transcribed to the check no question can be raised relative to the identical party for whom the check is intended; for example, The National Bank and Savings Company of Rochester, N. Y.

Please exercise care, therefore, to make sure that any vouchers sent in show the name and address clearly and in full, to make certain that the check goes promptly to the right party.

ADMINISTRATIVE NOTES

Death Penalty "Officer Snagem has recovered your mother-in-law from the kidnapper--and captured him," telephoned the Chief of Police. "We are going to demand the death penalty." The man on the other end of the line voiced his approval. "Good!" he exclaimed, "An officer who'd do a thing like that deserves it."

Of course, in a way the death penalty is severe--but did you ever find Saturdays, Sundays and holidays included in that leave without pay you took unexpectedly at the end of your vacation? That's infinitely worse. And the powers-that-be are going to take exactly the same action every time you fail to apply in advance for leave.

The Comptroller General's office has ruled definitely that an employee on leave without pay granted in advance for a definite period and who reports for duty at the beginning of the duty day next following the expiration of such definite period, is entitled to compensation for Sundays and holidays occurring between the expiration of the leave granted and the day of actual reporting for duty.

BUT--where leave without pay is taken without obtaining appropriate authorization prior to the taking of such leave, the employee is considered in a non-pay status for the entire period during which he absents himself from duty (Saturdays, Sundays and holidays included), and deduction of pay is required for all days coming within the period, irrespective of whether occurring immediately prior to the day on which the employee reports for duty.

MORAL: Apply for all leave in advance. It's costly to extend a period of annual leave into leave without pay when the extension will include Saturdays, Sundays and holidays, without getting prior approval.

Correspondence Letter writers who dislike to begin their dictation by saying "In reply to your letter of July 1," etc. may find a solution to the problem in a suggestion made by a writer in American Business. He says he has adopted the plan of having his stenographer type at the head of each letter she writes: In reply to your letter of _____

In this way he makes certain that every letter that goes out refers definitely to the communication to which it is a reply; and at the same time he is left free to start off in the letter proper saying what he has to say.

When this plan is generally adopted, remember that you saw it mentioned first in the News Letter!

ADMINISTRATIVE NOTES

Contractor Liability. Where by contract provision a contractor is made responsible for the proper protection of the work until completion and final acceptance, and the delivery of the building at that time "complete and undamaged", the fact that damage to the building resulted from an "unprecedented" flood does not absolve the contractor from the responsibility for restoration and delivery of the building as contemplated by the contract, the building, although substantially completed and occupied, properly not having been accepted by the United States at the time of the flood.

This is an interesting and important angle developed in connection with the Ohio floods this year. The contractors had completed a building sufficiently to permit it to be occupied in part, but had failed to correct a number of mechanical defects and omissions so that the building had not been officially accepted--it couldn't be, legally, of course, until it was actually complete and undamaged. While the matter was hanging fire the floods came--and the Comptroller General's office ruled that since the building had not been officially accepted--and could not be, for that matter, since it was not actually completed--the contractors must repair the flood damage at their own expense and deliver the building "complete and undamaged" in accordance with the terms of the contract.

It is well to bear this situation in mind and insist that the contractors actually complete work as promptly as possible so that official acceptance may be made, doing away with the possibility of any such unsatisfactory condition as the one described. It is an expensive lesson for the contractor--who, of course, will always blame the Government for not pressing the matter of correcting the mechanical defects, etc.

Veterans In accordance with the usual custom, employees of the Department affiliated with the American Legion, The United Spanish War Veterans, Veterans of Foreign Wars or the Military Order of the Purple Heart, may be granted annual leave or leave without pay for the purpose of attending the annual conventions of these Veterans organizations, provided such absence does not interfere with the performance of the necessary work of the Department. The dates of the respective conventions are:

American Legion - New York City.	September 20-23
United Spanish War Veterans, Columbus, O.	Aug. 22-26
Veterans of Foreign Wars, Buffalo, N.Y.	Aug. 29-Sept.3
Millitary Order of Purple Heart, Philadelphia, Pa.	Aug. 5-7

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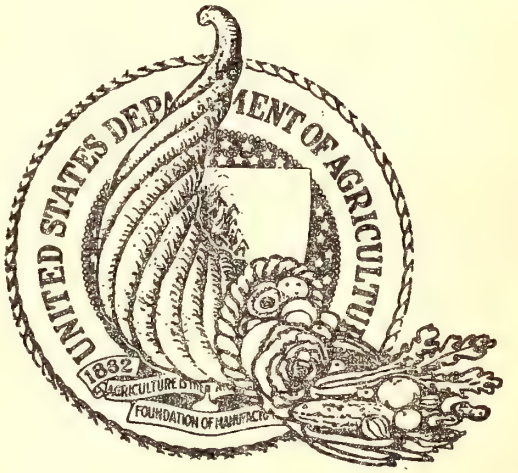
THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D.C., August 1, 1937 No. 15

Cost of Research

A well known plant pathologist held in his hand a copy of Circular No. 441, "Development of Powdery Mildew Resistant Cantaloup No. 45," in which Ivan C. Jagger of our Division and G. W. Scott, formerly research assistant in truck crops, California Agricultural Experiment Station, report on this cooperative breeding work.

"In this little circular," he said, "with its 5 pages and 4 figures, is recorded a truly amazing accomplishment. In 1926 the cantaloup industry of the Imperial Valley of California--the leading cantaloup producing section of the United States--appeared to be headed for certain extermination as the result of attacks of powdery mildew. Now, ten years later, it is not only still alive, but flourishing. Why?" He tapped the circular with his finger. "This circular tells why--because these plant breeders have been able in this short space of time to produce commercially satisfactory mildew-resistant cantaloups."

It did not require 10 years, for the new cantaloup was attracting considerable attention even in 1934. By 1936 nearly half the cantaloup acreage in Imperial Valley was planted with it and the proportion was considerably increased in 1937--Brawley estimates 90 percent. It was in 1926 that preliminary work was started by Jagger and the late Dr. J. T. Rosa of the University of California, but it was not until 1928 that the wide range of varieties, secured from many parts of the world by the Division of Plant Exploration and Introduction, showed anything of noteworthy promise. That year a number of plants of mixed varieties remained entirely free from mildew and the road to success opened before Jagger and Scott, the latter having joined the work after the death of Dr. Rosa.

Dr. G. H. Coons, former president of the American Phytopathological Society, has estimated that this new cantaloup represents fully $5,000,000 annual production that would not be possible without it, so that the work supplies a splendid confirmation of the assertion often made that research may cost in two ways: First, there may be the cost of doing it; and second, there may be the cost of NOT doing it. And the cost of NOT doing it is quite likely to be greater. In this instance it is a liberal estimate to fix the cost of producing the new disease-resistant cantaloups at $40,000 for the ten-year period, the work being conducted along with other projects handled by Jagger and Scott. Not to have spent the $40,000, then, would have meant the loss of $5,000,000 annually instead of a lump saving of $40,000.

Successful business men recognize that money can not often be made without spending money. In a successful business there is really no such thing as selling expense for selling is an expense only where the sales effort is not productive--otherwise it is an investment. No business man expects to sell every prospect any more than the research specialist expects every line of investigation to produce commercially profitable results. One success will offset a dozen so-called failures. The research specialist often learns so much from his failures that in the long run they might very well be listed among the successes.

Dr. Coons estimated the total money value of disease-resistant vegetables as $29,000,000 a year, this not being the value of the crop but the increase in value over what could have been expected from the old disease-susceptible sorts. The increase from the new cantaloup, taken with the value of the disease-resistant lettuce produced by Jagger, amounts to approximately $18,000,000 a year--which, oddly enough, happens to be almost exactly the total cost of the Department's fruit and vegetable investigations since they were inaugurated definitely 75 years ago!

Here's the history of the development of Powdery Mildew Resistant Cantaloup No. 45: Step 1, resistant plant (ribbed melon with slight netting, poor flesh) in a variety from India crossed with Hale Best, 1928; step 2, F_1 resistant selection (promising small cantaloup) open-pollinated, spring, 1929; step 3, F_2 resistant selection (large elongated cantaloup) backcrossed with Hale Best, fall 1929; step 4, F_1 (from backcross) resistant selection (promising medium-sized cantaloup) open-pollinated, spring 1930; step 5, F_2 resistant selection (fair large cantaloup) self-pollinated fall 1930; step 6, F_3 homozygous resistant population (cantaloups of various size, shape and quality) mass selected to give Powdery Mildew Resistant Cantaloup No. 50, spring 1931; step 7, F_4 resistant selection (good oblong cantaloup, fair netting) from Powdery Mildew Resistant Cantaloup No. 50 open-pollinated, spring 1932; step 8, F_5 resistant selection (good oblong cantaloup, fair netting) open-pollinated, fall 1932; step 9, F_6 resistant selection (good oblong cantaloup, very good netting) open-pollinated, spring 1933; step 10, F_7 resistant selection (good oblong cantaloup, good netting) self-pollinated, fall 1933; and step 11, F8, homozygous resistant population (good cantaloups of uniform size, shape and quality) mass selected to give Powdery Mildew Resistant Cantaloup No. 45, spring 1934.

NUT INVESTIGATIONS

J. R. Cole, Albany, Ga.

"Nicotine sulphate was included in the pecan scab spray applications, with the exception of those plots receiving the wettable sulphur in combination with copper sulphate and bordeaux mixture, for the control of black aphis," he writes from the U. S. Pecan Disease Field Laboratory on July 17th. "The heaviest aphis infestation was on those plots that were sprayed with ordinary 3-3-50 bordeaux mixture, as well as the plot sprayed with 3-1-50 bordeaux mixture where 'finishing lime' was substituted for regular spray lime. The foliage on this plot is colored as much, or more, than those plots sprayed with the regular 3-3-50 bordeaux.

"Apparently the reason that we are not getting as good control with the 2-1/2-50 bordeaux mixture and oil as we are getting with the other bordeaux combinations is because there isn't enough copper in this preparation.

"Scab infection counts (nuts) in the Alley plots at DeWitt are as follows: Check plot (south) sprayed with 3 applications of 1-50 zinc sulphate, 93 percent infection; check plot (north) no spray, 78 percent; and sprayed plots, prepollination 2-1/2-50 followed by three applications of 3-3-50 bordeaux mixture, 8 percent infection.

"My theory is that the difference in the scab on the check plots is due to the vigor of the trees. The trees in the north plot are rosetted while those in the south plot are free of this disease. Scab only attacks the vigorous growing tissue."

Howard E. Parson, Shreveport, La.

Writing from the U. S. Pecan Disease Laboratory there on July 17th, he says: "Scouting was done in the Skannal orchard for determining how much bunch disease had spread since the spring of 1936. Forty-seven additional trees were found diseased, most of which were of the Pabst and Schley varieties.....

"There still is considerable leaflet drop from the bordeaux sprayed trees in the Fullilove orchard. In the Webb orchard where some check up might be made on whether it is the strength of the spray, the amount or kind of lime used, or oil incorporated with the spray that has caused the dropping, the shed has not occurred since early spraying. I am inclined to believe that the drop is caused from too great an accumulation of spray material during dry periods.

"Although we have had good rains this season, they have come infrequently, the periods often being so widely separated that there has been threat of drought injury."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Excellent control of walnut bacteriosis has again been secured by the application of a sufficient number of correctly timed and thoroughly applied treatments of bordeaux mixture 2-2-50," he writes July 10th. "Thus, in tests carried on near Gaston, Oreg., three applications, two before bloom and one afterwards, of bordeaux mixture 2-2-50 plus a light medium mineral spray oil, one pint to 100, reduced the incidence of infection on the nuts from approximately 43 percent to around 5.7 percent.

"Preliminary results of cross-inoculation studies were also taken during the latter part of the week. In these studies, walnut fruits growing on isolated, young Franquette walnut trees on the college farm at Corvallis, Oreg. were inoculated during a rainy period, about the end of June, by spraying with a pure water suspension of the filbert blight pathogene. At the same time walnut fruits on adjacent young trees were inoculated with pure water suspensions of Phytomonas juglandis (the walnut blight pathogene).

"Lesions, which are so far indistinguishable from these produced by the walnut blight bacterium on walnut fruits, are now visible on nuts inoculated with the filbert blight organism. The lesions produced by both pathogenes are identical in appearance, size and depth. These preliminary observations along with the results of our cultural studies strongly suggest that these two organisms are very closely related, if not identical."

Writing on June 26th he said: "In tests carried on in a Franquette orchard near Aumsville, Oreg. three applications of bordeaux mixture 2-1-50, two treatments before bloom and one afterwards, reduced the incidence of infection on the nuts from approximately 25 percent to 3.7 percent. Copper oxalate 2#-50 seemingly gave even better results than bordeaux mixture, reducing the incidence of infection to but 1.9 percent. Copper oxalate '40' (40 percent metallic copper) 2 pounds to 50 gallons, also gave very good results, reducing the incidence of blight infection to 4.9 percent. However, Copper 'Z-O' (copper zeolite) was ineffective in the control of blight as there was as many infected nuts in this plot as in the untreated part. All dusting materials used in this orchard, including a 10 percent red oxide of copper dust and a copper lime-bentonite dust, were inferior to bordeaux mixture in their effectiveness against the walnut blight bacterium."

F. N. Dodge, Robson, La. (Pecans)

"Downy spot is developing rapidly on unsprayed Stuart trees," he reports July 19th. "I believe it is as bad now as it was at this time last year. However, one has to look hard and long to find any Downy Spot lesions on the trees which were given two bordeaux sprays. Some Black Aphid injury is showing on the sprayed Stuart trees."

NUT INVESTIGATIONS

The Pecan Tree Has Big Feet! As a group, pecan growers are the most optimistic people in the world. No matter what this year's experience may be, they will remain convinced that next season will find all the trees with bumper crops of well-filled nuts. This situation has given rise to the suspicion that all the nuts are not on the trees--but this does the growers an injustice. Their only trouble is that they do not read enough poetry.

In one of Sir William Watson's poems, for example, he attempts to explain the popularity of Wordsworth with a large number of persons, in spite of the fact that he seems to lack many of the qualities we admire in other poets. Watson offers this one-line explanation:

"Thou hadst for weary feet, the gift of rest."

There, my friends, you have the explanation of much of the trouble encountered by the pecan grower. They are not Wordsworths, and they have failed utterly to realize that the pecan tree has big feet. It is true that my knowledge of the pecan may be summarized in a paraphrase of a famous verse: I've never seen a pecan tree; Perhaps I'll never see one. But this I'll tell you, anyhow: I'd rather see than be one. And the reason I'd rather not turn up as a pecan tree in some future reincarnation is that my parents never could realize that as a boy of 10 I needed a number 9 shoe and so crowded my feet into number 7's. Since I have been in a position to buy my own shoes, I have purchased number 11's, if no larger sizes were available, and my troubles have ended. Pecan growers could profit from my experience.

The agronomists tell us that Hell hath no fury like a woman's corn; and pecan trees suffer, too, the poor dumb brutes. When a pecan tree really stretches out its toes, it's feet cover an area fully twice as great as the length of the branches of the tree. You can picture for yourself, then, what is happening in the closely planted pecan orchards of this country. No pecan tree crowding number 11 feet into a number 7 shoe is going to be worth much as a producer.

Probably no single operation would do as much to improve pecan growing in this country as the general substitution of number 11's for the number 7's now used. Of course, if the orchard happens to be planted to poor varieties, improving conditions by thinning and wider spacing isn't going to help much. On the other hand, if the orchard is planted to superlatively good varieties, the owner hates to remove any of them!

For that matter, there are people who go on suffering with corns and bunions year after year,-- I'm merely offering this suggestion to Max Hardy and his "asparagus sprouts" for what it is worth.

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"The storm of July 5 was accompanied by a high wind and in the section between Lowell, Rogers and Monte Ne, the benefits of the rain were offset by hail damage," he writes July 10th.

"In this area the wind and hail damaged the apple crop as much as 75 percent; in some orchards trees were blown down and the leaves and fruit left on the trees damaged by hail. Corn fields were practically destroyed as were also tomato fields and truck gardens. The damage was so extensive in Lowell-Monte Ne area that the growers have appealed to the Resettlement Administration for Government aid in replanting their fields. P. R. Corley, the county agent at Bentonville, reports that all tomatoes, peaches, apples, grapes and other crops in an area 7 miles long and 3 to 4 miles wide were badly injured.

"The Fayette ville orchards escaped hail injury but the wind blew down a considerable amount of fruit. In our experimental plots at Ruppel Brothers, it was necessary to make an extra picking of drops as the result of the storm. The number of apples blown to the ground varied from 80 to 200 in the sprayed blocks and from 310 to 364 in the check plots."

Writing on June 26th he said: "The statement made in a previous report concerning the absence of the codling moth needs a slight modification. The moth is not present to any extent in those orchards where the crop was either completely eliminated by the frost in 1935, or where the grower picked off, early in the season, the few apples that escaped the frost. Some orchards, however, north of Fayetteville had a crop of fruit last year and the codling moth is present in these orchards again this season. On the whole, however, the frost and drought in 1935 rather effectively reduced the codling moth infestation in northwest Arkansas."

C. P. Harley, Wenatchee, Wash.

"The cherry harvest in the Wenatchee Valley is about over, such as it was," he comments July 6th. "Bings and Royal Ann were practically a total loss. Some few cars were shipped, and although the price was fairly good, the cost of picking and sorting was excessive and the yield very low, due to cracking, so that the total production this year was extremely low. Lamberts were better, although this variety also showed some cracking, so that the production was curtailed.

"Losses in other years due to cracking have occurred. However, this year has been the first in the history of the Valley when the entire crop was practically ruined. This has been quite a blow to this district as the crop was estimated at approximately two million dollars."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

Writing from the Cranberry and Blueberry Disease Laboratory on July 15th he says: "The blueberry season in New Jersey is nearing its peak, with most of the mid-season varieties rather well cleaned up, and the Rubels (fairly late and the main crop) just starting. The price during the first half of the season was very satisfactory and is still moderately good. Some of the midseason varieties fell off in size during the hot weather, but there was very little suffering among the plants. The dusting with derris for control of the fruit fly has been completed, and flies have been almost entirely absent thus far from dusted fields.

"There was considerable apprehension among cranberry growers that heavy blasting of the flowers might result from the very hot weather, but there has been little indication of general blasting up to the present time, and the prospects are still bright for a good crop of fruit. Many bogs have been dusted with pyrethrum for control of the blunt-nosed leaf hopper, with fair success, but more growers have turned to the application of pyrethrum liquid with their bordeaux sprays, which we consider a good trend. There have been many young bogs sprayed for control of fungous defoliation, with marked success.

"One of the airplane dusting services had the misfortune to lose a plane, with both pilot and mechanic, a few days ago, while engaged in dusting fields of beans; a wing tip caught in a tree on a turn and both men were pinned beneath the machine when it overturned in a canal."

He had written June 30th: "The blueberry harvesting season is well started, daily shipments having reached about 500 bushels. The crop will apparently show a good increase over that of 1936 in spite of poor pollination of certain varieties. It has not been so hard to secure labor for picking as had been anticipated earlier, although many native pickers have been lured away by the prospects of profit to be made from shipping wild berries.

"Many blueberry growers have had their fields dusted with Derris by airplane during the past week to control the late fruit fly. This treatment will be repeated in about ten days. Control of the insect in this way was highly successful last year.

"Most cranberry bogs have come into bloom and prospects still look bright for a large crop....Young bogs are beginning to show defoliation due to Guignardia. Several of these bogs have already been sprayed with bordeaux to cure this condition."

DECIDUOUS FRUIT INVESTIGATIONS

W. W. Aldrich, Medford, Oreg.

Writing from the U. S. Pear Field Station on July 12th he says: "Blight infections entering through Bartlett fruits are numerous, entrance apparently occurring where fruit was bruised by ladders, etc.

"The Valley has just produced a record cherry crop, unaffected by June rains. The American Fruit Growers has put the entire crop in brine, paying 5 cents for Bing and 6 cents for Royal Ann. The Cherry picking began June 25 and ended July 9, with a little over 1200 barrels, or (with 250 pounds of cherries to the barrel), 150 tons shipped.

"I am continuing to care for the two small plats comparing unsprayed with sprayed (arsenate of lead and lime-sulphur) soil, as a part of a large project by Professor J. S. Jones of Oregon. Jones analyzed the soil and found 5 p.p.m. of lead in unsprayed soil and about 150 p.p.m. of lead in sprayed soil. Arsenic was in the proportion expected from arsenate of lead formula.

"Thus far alfalfa, sweet clover, white clover, strawberry clover, Laxton Progress peas, carrots and lettuce have grown equally well in both plats. Cabbage, tomatoes, sweet corn and potatoes have grown somewhat better in sprayed soil.

"Soil moisture in the top (driest) foot in non-irrigated pear irrigation plots had decreased to 30 percent of the available capacity, and during this warm weather fruit growth rate for Bartlett as well as Anjou has begun to decrease slightly below that in irrigated plots."

He had written July 5th: "After air temperature maxima above 90°F. on June 27 and 28, there was a light rain on June 29th. The remainder of the week was moderately warm. Growers believe that blight infections are spreading less rapidly than during the previous six weeks. This might be expected in shoots, which have ceased elongation. Also, since all growers are examining trees for the second time, less points of infection would be expected.

"Some growers are devoting all attention to Bartlett, on the basis that infection will spread less rapidly in Anjou than in Bartlett. Bosc continue to show only a few infections. The reduction in the 1937 crop in this district as a result of blight might be considered 30 percent for Bartlett and 15 percent for Anjou. Since many Anjou trees have not been carefully examined, blight will not be 'under control' until next spring, when all holdover cankers are removed."

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, East Wareham, Mass.

"The second spray was applied to most of our experimental plots this week," he writes from the Cranberry Disease Field Laboratory on July 17th. "Only a few more plots remain to be done and as the water was held late on that bog they will not be ready to spray until next week. The berries appear to have set well. Some of the largest berries are now 5-8 mm. in diameter.

"On Monday leaf samples were collected from one series of plots to be analyzed for copper. From casual observations made in the field as the plots were being sprayed, it appears that bordeaux made up with bentonite and rosin fish oil wets the cranberry vines better than any other wetting agent tested. With that a very good film of spray was obtained on new leaves and on the cranberries themselves. There are very few wetting agents that will make the spray spread out and stick to the berries.

"Blueberries are ripening more rapidly now. This is the first week of picking commercially. There is more 'mummy berry' this year than is ordinarily found, but it is still not serious.

"Dry weather continues. There were a few local showers this week but the rainfall was light. Many of the cranberry growers are keeping the ditches filled to supply water to the vines."

He had written July 10th: "Blueberries are beginning to ripen. There is quite a large crop this year. As the entire crop of at least two growers in Massachusetts has been contracted for by the A. R. Parker Company, a dairy firm operating large ice cream and lunch stands throughout eastern Massachusetts, the market should be better for other growers. Berries are starting off at 55 cents per quart at the State bog.

"The weather has been very hot this week, with no rain. It was 98°F. in the shade at the State bog Thursday afternoon--July 8th--which is unusually high for here...."

"Crossing of cranberry varieties is in progress," he wrote July 3d, "but has been much interrupted this week by spraying. A new variety of cranberry, Aviator, is being used more extensively in crosses this year. Some crosses of Aviator with other varieties were made last year, but only a very few of the seedlings survived. Aviator is a rather late variety. The vines are very productive and not as susceptible to false blossom as the Howes."

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"The local station agent reports that to July 1, 115 cars of peaches have been shipped from Fort Valley this season," he writes to Dr. Cullinan on July 6th. "Up to the same time last year, 578 cars had been shipped. For the State as a whole the shipments have been 1,067 cars this year as compared with 2,459 last year. On that basis, the estimate of 3,500 cars for the season will not be far off.

"Mr. Wight visited the laboratory last Wednesday on his way to California, and we were extremely glad to have an opportunity to discuss with him some of the phases of the peach breeding problem. It was disappointing to learn that the Maxine variety is subject to prolonged dormancy, for being an early yellow variety suitable for canning or shipping, the Maxine might prove to be an excellent variety for this section otherwise."

He had written earlier--June 30th: "The crop of peaches was harvested in the Early Hiley stock orchard this past week. In amount the crop varied from 0 to 50 peaches per tree, mostly 10 and 20. Three peaches were obtained from crosses on the tented tree. Harvest of the regular Hiley variety is proceeding in commercial orchards in this section and after this week shipments of peaches will be light because of the almost complete crop failure on Elbertas. On Thursday of last week I drove to the experiment station at Griffin, Ga. to meet the men there and observe the varieties they have in their collection. They have a fairly complete collection with the exception of the newer New Jersey varieties. Mr. Stuckey and Dr. Cowart think highly of the June Elberta as an early yellow peach, especially for home orchards. On my return I stopped at a large packing house where a grower has installed a sulfur duster on his brushing machine. The novel thing about it was the use of a sulfur dust colored pink, ostensibly to add color to the fruit."

J. R. Kienholz, Hood River, Oreg.

"On June 30, a near cloudburst occurred at Hood River," he writes in his report for July 10th. "The station record showed 0.39 inches of rain in less than one-half an hour, while other parts of the valley received a good inch. Hail accompanied part of the storm. The storm split as it came up the gorge, part going toward Mt. Hood and the other toward Mt. Adams. Hail and rain traveled up the west hills, missed part of the Dee Flats, circled at Parkdale, and formed a whirlpool around the station of Summit, where hail injury was quite severe. Apples suffered most with only slight damage to pears. Much of the injury on young apples can be thinned but a few local orchards will suffer heavily."

DECIDUOUS FRUIT INVESTIGATIONS

C. O. Hesse, Davis, Calif.

"The apricot season has been very queer so far," he writes on July 5th. "As you no doubt remember, I remarked earlier on the spread between the maturing date of such varieties as Derby and Royal this year at Winters. Here at Davis differences even more striking have been noted in the variety collection. For example, Blenheim, Hemskirke, Moorpack, Tilton and Royal have ripened in approximately the order named, all reaching tree ripe condition in a period of two or three days. Normally, Royal and Blenhem should ripen first, in the order named, with the other three grouped closely together a few days later."

He had written June 24th: "From the returns received during the week the market for fresh apricots has held up very well so far. Picking for the canneries began the latter part of the week in the Winters section, however, in anticipation of the usual slump in the shipping market. However, the bulk of the canning crop will come off during the next two weeks.

"The various apricot varieties and seedlings are ripening somewhat rapidly at Davis at present. For this reason most of the week has been spent at Davis taking records on the apricot seedling block. We are trying to get fairly comprehensive notes on all the seedlings fruiting this year, and it is taking considerable time and close attention."

Elmer Snyder, Fresno, Calif. (Grape budding experiments)

"Some seedling buds put in older vines this season have now made from 4 to 5 feet of growth since the buds were inserted May 17th," he reports July 3. "With this growth so early in the season, fruit production next season is practically assured. Some selected mutations cleft-grafted in older vines this spring are showing some fruit clusters at this time....Summer temperatures were reached on June 27th, when a shade temperature of 111°F. was recorded. Considerable burning of exposed grape berries was noted at this temperature."

U. S. HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

While the rest of the country suffered with the heat it has been pleasantly cool here, with beneficial showers, says the report for the week ending July 17th. A freak hail storm of short duration the afternoon of the 15th badly damaged Dr. Powers' plots of breeding tomatoes and squash. Just across the alfalfa field, a couple of hundred yards to the north, the varietal trial plots of vegetables were uninjured.

HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Atherton C. Gossard (Nut Fruit Investigations)

"Notes were taken on half of the eight blocks in the chemical application studies in the pecan orchard," he writes July 10th. "The 'incomplete returns' indicate that there is no outstanding plot from the standpoint of general vigor, using shoot growth and foliage color as an index of general vigor. The plots which received soil applications of borax, however, continue to be outstanding because of their poor condition. The characteristic interveinal burning is more severe this year than last, although no repetition of the treatment was made this spring.

"The general condition of the trees also appears to be below what it was last year, and more small trees in the borax plots have died this year than last year. Where large borax treated trees occur on sandy soils, through which soluble materials leach readily, the injury is much less severe; and a few trees, which survived injury from the treatment, seem to be in excellent condition. Since a uniform application of boron was made on all trees, regardless of size, it may be that boron is beneficial, or, at least, not harmful, in quantities which are small in proportion to the size of the trees.

"Rosette symptoms seem to be about as prevalent on zinc treated as on those which did not receive zinc. Vigorous trees, which received zinc in their treatments, on a few plots on low land, seemed to have milder symptoms than those in drier locations; but the evidence is not general enough nor uniform enough to be at all conclusive."

ADMINISTRATIVE NOTES

Surplus Publications — The Editorial and Publications Office of the Bureau has informed us that arrangements have been made by the Department with the Superintendent of Documents, Government Printing Office, Washington, D. C., to take over stocks of surplus or obsolete publications we may have on hand and that should not, for one reason or another, be destroyed.

If you happen to have on hand surplus publications that you would like to have stored at the Government Printing Office, please send them to Mr. Gillette who will arrange for their transfer there through the Bureau's Editorial Office, if it is considered desirable.

ADMINISTRATIVE NOTES

Photographs On a number of occasions, and especially in the issue of October 15, 1936, devoted to preparation of manuscript, etc., the News Letter has spoken of the need for an extra carbon copy of the list of illustrations with manuscripts submitted for Department publication, this list to contain pencilled notations showing number of negatives and location. From time to time we have requests for extra prints of illustrations used in our publications and unless we have readily available information concerning the number of the negative and its location there is apt to be a good bit of delay in getting the print.

Authors (and their secretaries or typists) are urged to remember this need in forwarding manuscripts. In view of the fact that the information is lacking in our Division photographic files for some of the older publications a plan is being considered by which copies of the bulletins will be forwarded to the section leader or author so that notation may be made on the bulletin itself of the location of the negatives used for the illustrations, their numbers, etc., this marked bulletin to be returned for our photographic files.

Speculation In the June 1 issue we quoted Personnel Circular No. 44, dated May 8, 1937, calling attention to the President's letter of April 22, 1937, to the President of the Civil Service Commission, regarding the desirability of discouraging participation directly or indirectly by Government employees in the purchase or sale of corporate stocks or bonds or of commodities for speculative purposes. There has been some question as to the distinction between investments and speculation. An authoritative definition is: "Buying stocks on a margin or with borrowed money is speculation." Be guided by this!

Foreign Travel When employees contemplate traveling abroad on official business, a letter is prepared here to the Secretary of State, giving the names and designations of the travelers, their itineraries, etc. and requesting that arrangements be made through appropriate channels for the extension of any possible courtesies and facilities. Such employees should not conduct business with officials of a foreign country without first consulting the Diplomatic Officer of the United States in the country concerned.

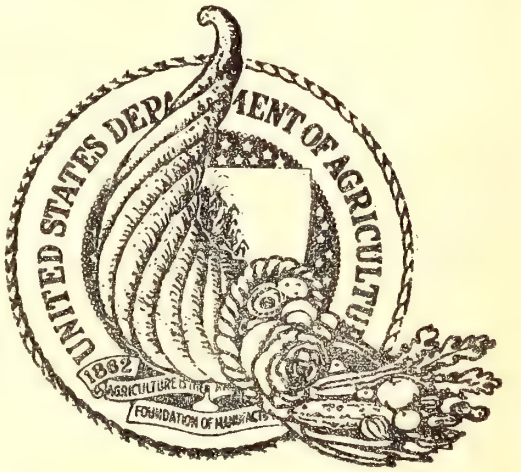
Make a note of this for future use. Such cooperation between the traveler and the Diplomatic Officers is absolutely necessary for the best results--and to avoid undesirable results.

Vol. 9 No. 15 August 1, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., August 15, 1937 No. 16

New York Markets "The fruit picture on the auction piers has changed markedly in the past few weeks," writes Dr. C. O. Bratley from the New York Market Pathology Laboratory of our section of Handling, Transportation and Storage and Market Disease Investigations, on July 27th--just a few minutes too late to catch the August 1st issue. "Only three weeks ago car after car of California cherries colored the display, following which the unfortunate Northwest cherry crop with its fruit badly water-cracked kept a daily car or two on the market. Yesterday two Oregon and one Washington cars sold for fancy prices; one lot from the former sold for $6.75 per Campbell lug, a high for the year. The fruit selling now apparently was not mature enough during the heavy rains of last month to become cracked. It is arriving in perfect condition. Credit must be given the Northwestern cherry shippers for their refrigeration practices following the rains, for although some lots contained as much as 40 percent cracked fruit, yet there was more transit freezing due to salting the cars, than there was decay. The last car for the season from Wenatchee sold this morning.

"Plums and Bartlett pears from California predominate on the displays now. As usual, the first few cars of Bartletts were immature, with the fruit poorly filled out and on ripening lacked sugar, flavor and color. Even so, the fruit sold well. Yesterday 34 cars of this variety were sold at an average price of $2.67 per box, $.75 lower than prices of last week. No decay has been found in them so far. Wickson is the leading variety of plum with Tragedy a close second. In these lots an occasional fruit has Rhyzopus rot. The worst Rhizopus rot of the season was in a lot of Tuscan peaches in a mixed car with nectarines and plums from Cutler, California. The fact that the other fruits were in good condition points to delay in refrigerating the peaches as a possible contributing factor. At least 25 percent of the fruit was decayed.

"Thompson seedless grapes from California and Arizona have been coming in for several weeks, but most lots lack enough sugar for good eating. Last week occasional lots of Malaga, Ribier, and Red Malaga from California came in cars with Thompson seedless. All of them would have profited by developing on the vine a while longer.

"Yesterday just two weeks later than last year, the first car of Sebastopol Gravensteins was sold here. A rather disappointing average selling price of $1.77 was realized.

"The last full car of Florida citrus for this season arrived early last week. Of course a few L.C.L. lots will filter in as was the case with 26 Bruce boxes of badly granulated Valencias this morning. The chief interest in citrus now is with acid fruit. This morning small lots of Perrine lemons, West Indian limes, Persian limes, and Lem-n-tang limes from Florida; and Meyer lemons, Sicily lemons, West Indian limes and Persian limes from Puerto Rico were offered on the auction. Persian limes from Florida are generally of high quality and, except for the riper fruits in large sizes which show from 2 to 5 percent blossom-end rot, are in good condition. This lime is meeting with considerable favor on the market. Last week 2/5 bu. crates (quarter-boxes) of them sold for around $2.00 while the average selling price for California lemons was $5.50 per box. Of course the lime is not really competing with the lemon yet for 18 cars of California lemons were offered this morning as compared with less than 500 boxes of all other acid fruits. More Florida limes had been sold in New York by the middle of July this year than were sold by the end of last summer.

"Several cars of Puerto Rico grapefruit come in on each Tuesday's boat. These are generally badly blemished from melanose and rust mite injury. Lately, due to outbreak of fruit fly, grapefruit from certain sections of certain groves must be stored at a temperature of 34°F. or below for two weeks. This fruit, most of which was in storage for a month, is now arriving on the market. Occasionally a badly pitted fruit is encountered but otherwise it is in good condition except for some slight wilting.

Edwin Smith, Wenatchee, Wash.

"The week of July 12-17 was largely consumed by travel to and attendance at the H.E.P.P. meetings at Corvallis. The horticultural subjects related to storage and transportation were discussed following talks by Henry Hartman, Fisk Gerhardt and the writer. We observe that Dr. Aldrich reported on the 'horticultural high lights' but failed to mention his subject, 'The Anjou Pear in Relation to Soil Moisture', in discussion of which he suggested an explanation as to why Anjou pear trees at Medford, Oreg. show a response to decreased soil moisture before the wilting percentage of the particular soil is reached. He suggested that possibly the wilting percentage of soil moisture was reached in a small zone adjacent to the rootlets but that limited root penetration failed to cause these zones to be sufficiently extensive to represent the soil taken in samples beneath the trees."

RASPBERRIES AT BELTSVILLE, MD.

Results of mulching 500-foot rows of raspberries set in April 1936 have already shown remarkable differences in growth as compared with unmulched rows. Cane-growth records were first taken November 10 and November 11, 1936, as follows:

	Latham (red)		Cumberland (black)	
	Mulched	Not mulched	Mulched	Not mulched
Percentage of plants alive	66	61	25	16
Total cane length ..	982'	491'	308'	155'
Number of suckers ..	393	20	---	---
Number of tips rooted	---	---	185	33

On June 29, 1937 the surplus suckers were removed and picking records were kept up to July 19, as follows:

	New shoots June 29		Number left		Yield to July 19	
Variety	Mulched	Not Mulched	Mulched	Not Mulched	Mulched	Not Mulched
Latham	4821	364	1213	314	13 quarts	10 quarts
Cumberland ..	----	---	----	---	3.0 "	0.3 "

C. F. Kinman, Sacramento, Calif.

"There has been such a wide variation between orchards in time of ripening of Bartlett pears that there is strong opposition among some growers to the use of the pressure tester to determine maturity," he writes to Dr. Cullinan on July 31. "Japanese rootstock tends to make pear fruits harder than normal, at least near the apex, and this may be the reason that pears in some orchards were extra large and had apparently reached a maturity that would permit them to develop maximum eating qualities before they break under 22 and 21 pounds pressure, which is required this year for local sales and export.

"Scorching of prune shoots and branches during the short hot spells this summer appears to me to be more pronounced than it is in most years. While this condition is common in the Chico district most summers, this year one will see orchards with numerous scorched branches many miles this side of Chico."

George F. Waldo, Corvallis, Oreg.

"A number of visitors looked over the plantings during the week," he writes July 17th. "These were members of the Northwest Association of Horticulturists, Entomologists, and Plant Pathologists, who were holding their annual meeting here; also members of the American Pomological Society, who stopped off here on their tour of the West. Among those chiefly interested was Dr. Colby of the University of Illinois."

DECIDUOUS FRUIT INVESTIGATIONS

M. A. Smith, Columbia, Mo.

"Further data have been obtained on the efficiency of copper phosphate in the control of pear leaf spot in the pear varietal orchard at Mountain Grove," he writes from the Fruit Disease Laboratory. "The results of this experiment have shown that copper phosphate has given excellent control of the disease on fruit and foliage. There has been however relatively light fruit infection due to Fabraea maculata this season. This appears to be due, at least in part, to the delay in primary infection early this spring. Bordeaux mixture and Copper oxychloride have also been used as pear sprays and with generally satisfactory results as far as control of the spot disease is concerned. Spray injury however has been more prevalent in the blocks sprayed with these materials than in those receiving copper phosphate.

"Cedar apple rust has been more prevalent this spring and summer than for several years past. Susceptible varieties such as Wealthy and Rome Beauty have showed very heavy foliage and fruit infection in many localities.

"Bitter rot was found on a number of drop apples of the variety Colton at Mountain Grove on July 12. Because of favorable weather conditions for apple bitter rot this season, most southern Missouri apple growers have included standard Bordeaux in their late cover sprays."

John C. Dunegan, Fayetteville, Ark.

"The crops in Northwest Arkansas were greatly benefited by two rain storms on July 18 and 19," he writes. "At Fayetteville 0.76 inch fell on the 18th and 1.26 the following day. At Bentonville 4.34 inches of rain fell, the heaviest single rainfall since December 23, 1932. Several small streams overflowed in the Bentonville area and traffic on the highways was halted.

"A visit to our experimental plots on July 20 showed that there were very few 'drops' under the trees. The rain storms were accompanied by considerable wind at Fayetteville but there was little wind at the Ruppel farm and consequently very few apples were blown from the trees.

"The work during the week has been concerned largely with apple leaf spot and apple measles experiments. One series of inoculation with Bact. pruni was started to test the susceptibility of peach trees which have been grown under controlled conditions in respect to presence or absence of various elements."

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, East Wareham, Mass.

Writing from the Cranberry Disease Field Laboratory on August 31 he says: "Nearly all the growers are picking berries as the season is now about at its best. All the blueberries were in good condition but some of them were suffering a little from the prolonged dry weather. Only a little mummy berry was observed. This was worst in a planting of some 4 or 5 acres at Hanover but even here the damage was negligible. There is a good demand for cultivated blueberries and prices are quite good, mostly 35 cents or better. The lowest prices are brought by berries which go into the Boston market where they are quoted at 30-32 cents a quart. Growers who sell further down on the Cape are getting 45 cents wholesale or 55 cents retail. One grower because of his very favorable location is selling nearly all of his berries at 55 cents.

"During the week I have set up a crude apparatus for measuring chlorophyll content of cranberry leaves. By passing red light through the chlorophyll solutions and measuring the amount of light which passes the amount of chlorophyll present can be determined. As the measurement can be made in the presence of other coloring matters of the leaves a great deal of time is saved which would otherwise be required to separate the pigments. Preliminary trials indicate that the set-up will be satisfactory.

"The cranberry crop is larger this year than last according to many growers, but others disagree. However, Dr. Franklin of this station estimates that the crop will be over 400,000 barrels and may go up to 450,000. Much depends, however, on weather conditions during August. If the dry weather continues during the month the size of the crop will be reduced. The crop last year was about 370,000 barrels."

He had written July 24th: "The analysis of cranberry leaf samples from sprayed plots for distribution of spray and for total copper in the spray deposit has been in progress during the week. This work is not completed but results so far show that one of the new wetting agents used (Arekap, a sodium salt of a sulphonated diphenyl compound) gives a somewhat better spread of the spray coating on both new and old leaves than does the rosin fish-oil soap which we have been using as our standard wetting and spreading agent.

"None of the wetting agents tested give a uniform spread of spray on both upper and lower sides of new leaves. Better spread is obtained on the upper surface than on the lower in all instances. However better control of fruit rots is to be expected on the plots on which Areskap was used with the bordeaux than on other plots. The second spray was applied to a series of plots yesterday which completes the spraying for the year."

DECIDUOUS FRUIT INVESTIGATIONS

C. O. Hesse, Davis, Calif.

"The work this week has been a continuation of that started earlier--testing and taking notes on the apricot seedlings," he writes July 14. "The peak of the harvest came this week. About 225 were harvested by the end of the week, and about 125 more were ready. This is well over a third of the total number of seedlings fruiting this year. When this group is cleaned up only about 150 will be left.

"The weather continued to be very warm this week. The several days of warm weather has caused a great deal of pit-burn to appear in the cots, and is giving us an excellent opportunity to select for resistance to pit-burn in the seedlings.

"Apricot harvesting activities have shifted to the later sections now; the Hayward district and the San Joaquin Valley districts are in the midst of their harvest."

W. W. Aldrich, Medford, Oreg.

"Information upon Pacific Coast pear production this year is becoming more reliable," he states in his report from the U. S. Pear Field Station, dated July 19th. "California now expects about 160,000 tons of Bartletts for cannery use, and about 5,000 630-box cars for fresh shipment. The Bartlett market at New York opened on July 12, ten days later than in 1936, with a price of $3.32 per box, as compared with an opening price of $2.37 in 1936. This fruit was from the Sacramento River district, picked immediately after July 5.

"In the Northwest, Bartletts are reported as 'a good crop of good quality.' A few cannery contracts have been made, guaranteeing a minimum price of $25.00 per ton for No. 1 and $12.50 for No. 2 fruit.

"The Anjou estimate for the Northwest is about as follows:

Wenatchee-Yakima	400,000	boxes
Underwood-Mt. Adams ..	120,000	"
Hood River	750,000	"
Medford	450,000	"

"This total Anjou production of 1,720,000 boxes would be about 500,000 boxes more than the 1936 production. From what J. B. Kienholz tells me, I suspect that the Hood River crop of 750,000 boxes will only be attained by packing a large amount of frost-marked, scab-spotted fruit in the 'unclassified' grade. Also, I doubt if the Medford production exceeds 400,000 boxes."

NUT INVESTIGATIONS

Use of Ethylene Gas in Pecan Harvesting

Discussing the Yuma, Ariz. pecan crop, A. H. Finch points out that in certain sections the pecans do not mature satisfactorily. The shucks fail to loosen so as to release the nuts properly colored and marked. This occurs quite frequently in some sections, occasionally in others. The failure of the shucks to open and release the nuts results in the pecans germinating on the tree, destroying their market value.

Preliminary tests in 1935 indicated that ethylene gas might perhaps be used to advantage in causing the pecan shucks to separate from the shell, and the studies of the 1936 season so far confirms this belief and the new method is being recommended to the Yuma pecan growers. It will not solve the problem of poorly filled nuts, nor will it transform a poor variety into a good one, but it promises to enable the growers to get the best possible results from their crops.

It is being suggested that the harvesting in the Yuma area begin as soon as the kernels appear to have developed their maximum filling and quality, regardless of the condition of shuck opening--say, about the time 50 percent of the shucks are loosening and when pre-harvest germination begins. For varieties that germinate badly (Burkett and Halbert, for example) the use of large picking crews is desirable in order that the harvesting may be done promptly. It appears that the Yuma pecan growers must get in the habit of regarding their pecan crop as a perishable one--to be handled accordingly.

The nuts, incidentally, should not be threshed from the trees. The normal uniform coloring of the shell is dependent upon its drying in contact with the shuck and threshing will cause some of the shucks to come off and prevent the nuts from coloring satisfactorily. The nuts should be stripped from the trees and allowed to fall on sheets spread below.

The method of using ethylene gas is to place the nuts with the shucks still on them in a tightly closed room, running in enough gas to give a 1-1000 concentration. The room is kept closed for about 8 hours and then ventilated, again closed, and another charge of ethylene run in with the room again being closed tightly for 8 hours. This is repeated until the shucks loosen--for 24 to 48 hours. If the room is not completely gas-tight, it may be necessary to give additional charges of the ethylene between ventilation.

Once the shucks are loosened, the nuts are allowed to dry. This takes several days, depending upon varying conditions. After drying, the shucks are easily removed--and the nuts are ready for grading, packing and shipping.

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"The blueberry season has passed its peak but the later varieties are picking heavily," he writes from the Cranberry and Blueberry Disease Laboratory on July 31. "Daily shipments this week have averaged nearly 1,000 packages and the price continues to be very satisfactory. The size of the fruit harvested in many fields has fallen off, so that the portion of the berries making the largest grade is smaller than previously... The prospective cranberry crop in the State is also dropping. Definite forecasts are hazardous, but at one time the highest predictions reached 150,000 barrels, with conservative estimates going as high as 125,000 barrels. The opinion is now becoming general that the crop will not exceed, and will probably be below, the latter figure...

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"Examination was made of our new creations 8-31 and 8-32 in three of the non-irrigated orchards," he writes July 24th. "In one of the young orchards the trees have made a remarkable growth, even under somewhat adverse conditions. In all the orchards the foliage is outstanding in density and fine color. This is especially true of 8-32. Grafts coming into bearing in two orchards are producing an exceedingly heavy crop on 8-32, the branches hanging nearly vertically from the weight of the nuts. The wood seems fairly tough and so far none of the branches have broken. There is a good crop on 8-31, but not nearly so much as on 8-32. In these orchards the Drake and some other varieties have had brown rot badly. I did not find any brown rot on 8-32 but on 8-31 there were signs of it on the tips of an occasional twig. Judging from observations made at this time the 8-32 is the best nut for this district. One of the growers told me that the grafts produced a heavy crop of nuts last fall from 8-32, although they were then only two years old. He states that he submitted samples of the nuts to one of the leading commercial firms and they expressed themselves as being very desirous of purchasing nuts of this character and thought them outstanding."

Howard E. Parson, Shreveport, La.

"Notes were taken on the control of downy spot and vein spot with bordeaux mixture in the Fullilove orchard and the spots on 500 unsprayed and 1,000 sprayed leaflets counted. The results taken on the basis of spots per 1,000 leaflets are as follows:

	Sprayed	Unsprayed
Downy spots	633	7,700
Vein spots	25	412

"The benefits derived from controlling downy spot have been largely eliminated by the amount of black aphid injury there is. However, vein spot has been quite satisfactorily controlled in this block so far. It remains to be seen how much more it will increase during the remainder of the season and what it is doing in the Webb orchard."

NUT INVESTIGATIONS

J. R. Cole, Albany, Ga.

"Scab infection counts were made of our most important plots in the Taylor orchard during the week," he writes July 31st. "These counts indicate quite clearly just what the scab disease is doing for us down here this year. It is by far worse than I have ever seen. I mentioned in an earlier report that this scab disease is causing premature defoliation in the Champion orchard, west of Albany, on the Schley variety. Well, it is not only causing premature defoliation in that orchard but in the VanCise and other orchards as well. In fact, we are having the battle of our lives this year in controlling this disease here. In spite of the fact that these infection counts run high on the sprayed plots, most of the infected nuts are in Class 2, and unless it continues to rain I do not believe the nuts will be seriously injured, especially on the better bordeaux plots. As the report also indicates, the nuts on the check trees are pretty badly spotted with the scab fungus and most of them will be a total loss. There will be very few marketable nuts produced in orchards where control measures have not been administered to the scab susceptible varieties.

"In company with Mr. Lewis I checked the effects of the rosette treatments in the Bennett-Cox orchard near Albany during the week. I was surprised to find that very little rosette had appeared in the plots that were sprayed with zinc sulphate and bordeaux mixture, in spite of the fact that there has been no treatment since 1934. There is a little rosette showing in the trees that received light soil applications of zinc sulphate but the heavier ones, especially those that received ten pounds, are growing vigorously without any sign of the rosette disease.

"It continues to rain here, most of the rainfall coming in the late afternoons and keeping the leaves wet all night. Pecan varieties that are resistant to the scab disease as well as those that have been sprayed to control this disease have nuts that made excellent growth due to the abundance of rain that we have had this year. These nuts are much larger than they have been in years past and if we continue to get plenty of moisture it looks as if we will have a fine quality of nuts produced here this year."

Report for the week ending July 24th: "I visited growers in Americus and Fort Valley who are spraying for scab control, this visit being made to several growers who thought earlier in the season that they could get by without spraying. The recent rainy weather increased scab infection so much that they are now making their first spray applications. In my opinion the application will check the scab in most orchards around Americus and Fort Valley because of the few leaf infections. Not only are second-hand spray machines much in demand, but new ones are still being purchased where the growers have a good crop of nuts and scab is just making its appearance. All growers who are spraying have excellent control of the scab disease and if they get a good price for their Schley nuts they will be highly pleased with the spray program this year..."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Results of studies carried on in a small planting on the college farm at Corvallis, Oreg. show that the application of a sufficient number of timely bordeaux mixture sprays will materially reduce the incidence of blight infection traceable to spread by rain," he writes July 24th. "For example, in the untreated plot, 57 percent of the trees were severely infected, whereas in the plot sprayed with three applications of bordeaux mixture 4-4-50 (one in the late summer, one in late fall and one in early spring) only 13 percent of the trees were moderately infected and there were no severely diseased trees in this plot.

"The latter part of the week was spent in the field, mostly in the vicinity of Aumsville, Oreg. taking final results of spraying and dusting walnuts for the control of blight. Since taking preliminary results in this district about a month ago, there has been further development of blight, undoubtedly traceable to the unusually heavy June rains, which has increased the percent of infected nuts in most of the plots. Thus, in a Franquette orchard belonging to Mr. A. Wolf, near Aumsville, 3.7 percent of the nuts examined on June 24 in a plot sprayed with bordeaux mixture 2-1-50 contained blight lesions. In this same plot 12.1 percent of the nuts now contain lesions. The untreated plot now contains approximately 82.5 percent blight. There is one plot in the orchard, however, which did not show the same proportionate increase in blight infection, namely, the plot sprayed with copper oxalate 2#-50. This plot on June 24 contained 1.9 percent blight infection, whereas it now contains 5.5 percent. As a matter of fact, this plot contains the least amount of blight of any plot in the orchard, including the plot sprayed with 4-4-50 bordeaux mixture. It would appear as if this preparation has a greater duration of effectiveness than bordeaux mixture. The foliage in the copper oxalate plot looks exceptionally good at the present time. The dust used in tests carried on in this orchard, including a 10 percent red oxide of copper dust and a 20 percent copper lime-bentonite dust, were all inferior to bordeaux mixture and copper oxalate in effectiveness, containing respectively 28.1 and 60 percent blight infection."

Max B. Hardy, Albany, Ga.

"The drop of nuts continues to be relatively heavy with shuckworm as the primary cause," he writes from the U. S. Pecan Field Station and Laboratory on July 31. "It is difficult to say as yet just how seriously the drop occurring at this time will affect the crop. Some trees are still carrying good crops but on others the crop will be very light. Observations from the highway through central Georgia lead to the conclusion that the crop north of Albany will be good while around and south of Albany the crop will be not better than fair. To a large degree this reduction in crop from Albany south is due to shuckworm."

U. S. HORTICULTURAL FIELD STATION, MEREDIAN, MISS.

George P. Hoffman (Vegetable Crop Investigations)

"The last harvest from the tomato cultural blocks was made this week--July 21. One season's observations would seem to suggest that tomato growers in the commercial districts of Mississippi might profitably modify some of their 'time tried and accepted as best' cultural practices. Poor seed, variety strains, irregular practices in plant growing, and resulting poor plants are without question the 'keystone' to many of the problems of the Mississippi tomato grower. Consequently, studies having to do with variety strains and plant production have been started and will be carried along with cultural studies previously outlined and to be continued.

"Insects and rabbits have been extremely destructive to summer gardens in this section. Beans, both lima and snap, seem to be most preyed upon by rabbits. Consequently, locally grown beans are scarce, of poor quality and high in price. Watermelons are generally plentiful but cantaloups are getting scarce and, because of heavy infestations of pickle worms, are of poor quality. Early planted locally grown Porto Rico sweetpotatoes will begin coming on the market within the next 10 to 14 days."

N. H. Loomis (Small Fruit Investigations)

"The entire week was spent with Dr. C. A. Magoon in examining the grape work already in progress and planning further work. One day was spent with Dr. C. H. Ragland of State College, Miss., in examining the grape rootstock work at Poplarville, Miss. This work has been in progress for five years and the results are very outstanding. The Vitus champinii, Vitis rupestris, and Vitis aestivalis bourquiniana stocks show exceptional vigor and adaptability. The hybrid stocks vary in their adaptability. The pure Vitis doaniana, and Vitis vulpina (riparia) stocks were completely gone, as well as practically all of the varieties ordinarily grown in the North. These, however, may do very well on the better rootstocks."

NUT INVESTIGATIONS

C. E. Schuster, Corvallis, Oreg.

"The report from the walnut growers is to the effect that there has been a considerable drop in the orchards and there is now a heavy infection of blight showing up on the sides of the nuts.... The filbert crop is characterized by one Association manager as being from good to very heavy. It is quite evident that there will be a big increase over last year's heavy crop."

ADMINISTRATIVE NOTES

Oil Drums A member of a legal firm of somewhat doubtful character appeared at the office one morning wearing a magnificent diamond ring. His partners were much impressed and wanted to know where he got it. "You remember Levy?" he asked. "Sure," they said, "but he did not leave you any money, did he?" The other shook his head. "Not exactly," he admitted. "But I'm his executor and he left five hundred dollars for a memorial stone to be purchased for him. This is it."

Without going into the matter of morals too deeply, we pause to ask whether this man wasn't just as much entitled to his memorial stone as some unidentified stations men (not necessarily in our Division, of course) are to empty oil drums belonging to Navy contractors. We have been informed that a number of field men who have taken advantage of the Navy Department contracts for lubricating oil are not returning the empty oil drums, as provided in the contract, or paying for them. Not to do either is to beat the contractor rather than the drum. We hope that all of our field men who may be taking advantage of the opportunity to purchase oil in barrel lots under these special contracts are returning the empty oil drums within the 90-day free loan period.

Full Names on Payrolls And there was the man who declared: "Jerry has a wonderful radio. I heard him say he'd get Hell when he went home tonight." Of course, you will contend that the gentleman in question was referring to a different type of loud speaker--not to his radio, but the point is that there are a lot of ways of getting Hell and one of the easiest is to send in vouchers that do not give the first name, middle initial and surname of the payees. Mr. Gillette has had to telegraph twice recently in order to secure this information and permit the issuance of checks. Keep it up--and you can take my word for it that you won't need a radio!

In the January 15th News Letter we said: "Effective at once, payrolls MUST list the first name, middle initial and surname of payee or employee, instead of merely initials and surname. Take special note of this, because the Accounting Office has notified us that after February 1 payments cannot be made where employees are listed on payrolls by initials and surname only. The first name must be given in full."

This still stands. Of course a payee may sign L. Otto Gillette or Leroy O. Gillette, if he wishes, but not L. O. Gillette. Expense accounts and payrolls must be signed in this manner and purchase vouchers, too, unless the dealer happens to operate under a firm name using only initials.

OBSERVANCE OF LAWS AND REGULATIONS

The administrative officers of the Department are devoting increasing amounts of time and thought to the development of regulations and procedural instructions designed to supply essential control, advice, and assistance to employees in the performance of their duties. Commenting on certain phases of this subject, a memorandum from the Office of the Secretary says:

"Inquiries made by the investigational staffs of the Department and the General Accounting Office have revealed that in a limited number of cases officials and employees have attempted to provide 'easy' solutions of some of the operating problems encountered in their work. The evidence usually indicates that these actions have provided no personal benefit to the individuals concerned but on the contrary have been intended to expedite the performance of Government business, often with consequent reduction in the expenditure of public funds. While the Department commends constant endeavor on the part of all employees to devise ways and means for expediting the transaction of business and to reduce unnecessary "red-tape", it is apparent that the persons responsible do not recognize the serious implications of such actions when they involve disregard of legal or other properly constituted restrictions. In such cases they violate laws and regulations designed to provide for orderly processes of government, and the responsible supervisory officials of the Department and of its bureaus and offices can not condone such transactions, however well intentioned. Detection must necessarily result in the imposition of penalties which may sometimes seem of unwarranted severity in the light of the motives involved.

"Investigations which have been made indicate also that in a very minor number of instances members of the Department staff have deliberately violated laws and regulations to permit the accomplishment of objectives known to be prohibited, to avoid the time and effort required to conduct the business in the approved fashion, and for other purposes. The policy of the Department in handling such cases is well known.

"The approved procedures constitute the only legal, effective and really expeditious methods of conducting Department business. It is the policy of the Department to constantly review the current administrative, personnel, fiscal and property requirements to the end that operations may always be on the best basis permitted by existing law."

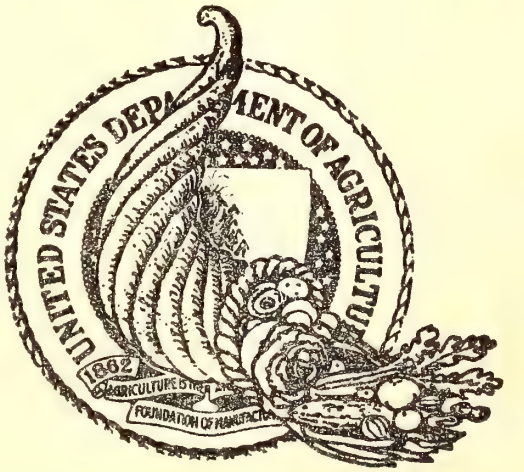
If existing regulations seem to you to prevent the expeditious handling of your work, the remedy lies in reporting such conditions through Dr. Auchter in order that determinations may be made whether the requirements can or should be modified. While the Department welcomes all proper efforts to improve existing requirements, it cannot, of course, sanction their disregard, whatever the intent may be of those who become involved in such transactions.

Vol. 9 No. 16 August 15, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This NEWS LETTER is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D.C., September 1, 1937 No. 17

Grapes in Mississippi

Giving us, so to speak, a bird's-eye view of the situation, N. H. Loomis writes from the U. S. Horticultural Field Station at Meridian, Miss. that the injury from birds has been very severe on some varieties of grapes, while others are not touched. The Brighton and Mericadel have been their favorites, he adds.

"Grapes were harvested all during the week ending July 31. The varieties Manito and Delaware in the rootstock experiment were picked. Although the records have not been summarized, the yield from the Manito on the Aramon X rupestris Ganzin No. 2 stock was much the heaviest, also the clusters were larger and fuller than those from the other stocks. Delaware grapes on weak vines set and matured heavy crops of fruit, but it did not color nor attain the quality that the fruit from the vigorous vines attained.

"Fourteen varieties were harvested the week ending August 7, the variety known as the 'Florida Beacon' being the only one having outstanding possibilities. The bunches were practically all large and perfect, and the berries were firm enough so that they did not shatter nor split readily. The yields were very satisfactory. It is a desirable grape for commercial use in this section."

J. M. Lutz has written from Meridian on August 7th: "If sugar content can be considered as an indication of quality in American grapes, these growing at the Meridian station are about the best in the country. Most varieties analyzed thus far this year contained 20 percent or more soluble solids. Most commercial pure juices on the market with added sugar contain less than this."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"An orchard of 15-year-old Yellow Transparent and Jonathan apple trees near Lincoln, Ark. was visited on August 5th at the request of the grower," he reports August 7th. "Trees were dying throughout the orchard but the loss was most noticeable in the Yellow Transparent block. In every case the trees which were dying show extensive trunk injuries that I attributed to the famous 1930 freeze. According to the grower trees have died each year for the past several years, but the death rate appeared to be greatly accelerated this spring. The drought of 1936 was undoubtedly the factor responsible for this sudden increase in the death rate and to this unfavorable factor must be added the fact that the grower did not fertilize his trees in the fall of 1936. I discussed the case with Prof. J.R. Cooper of the Horticultural Department, Arkansas Agricultural College, who prepared a set of fertilizer recommendations that were sent to the grower."

He had written July 31: "The growers all realize that the 1937 fruit crops are going to be large ones and that only the best fruit should be placed on the market. Several men expressed doubts whether there would be any demand for the lower grades of fruit. The peach growers realized that the large cantaloup crop (they are of excellent quality this year) was reducing the sale of peaches, while the apple growers were faced with the prospect that the large peach crop would affect the market for apples.

"On several occasions various growers expressed the opinion that a large portion of the 1937 crop would have to be shipped by rail as they felt that the peak of the movement by auto truck had been passed. Various explanations were offered for this condition, but the general concensus of opinion was that the regulations imposed by the highway departments of the various States was limiting the fruit movement by truck. One grower felt that steps should be taken to formulate uniform regulations governing the movement of trucks in interstate fruit shipments."

C. P. Harley, Wenatchee, Wash.

"The last two weeks in July were characterised by temperatures of 90°F, and above, reaching 100° on four different days," he writes August 5th. "Since July 30, however, it has turned decidedly cool, with a 74° maximum and a 50° minimum. This cool spell has already shown its effect on color of fruit and many of the red strains of Delicious are showing a deep red color on about 50 percent of the surface. This is perhaps the earliest that I have observed this much color....This week will wind up the bulk of the apricot harvest. In the main, the apricot deal has been quite satisfactory. The size of the crop was a little above normal, in size and quality excellent. Returns to growers have been from $45.00 to $50.00 per ton, which are considered good."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N.J.

Writing from the Cranberry and Blueberry Disease Laboratory on August 14th, he says: "The first six days of the period have been warm but the weather this morning is refreshingly cool. Very heavy showers have been frequent but mostly local, and distribution of rainfall has been very uneven. Many places, especially in Burlington County, are suffering seriously from drought. This is affecting the size of peaches and has lowered the quality and yield of most vegetables. On the other hand, the precipitation in and around Whitesbog has been freakishly heavy.

"The blueberry harvest is finished. The fumigator has not been operating during the past week, though small shipments have been made to New York City. Final returns for the crop have not yet been made up, but there was apparently an increase of about 10 percent above that of 1936. Mildew infestation is fairly heavy on the leaves of certain blueberry varieties, particularly Pioneer, Cabot and Jersey. We have applied fungicidal dusts for the control of this disease and will be especially interested to learn whether mildew control during the latter part of the summer will affect the vigor and rooting ability of cuttings made next winter; two of the above named varieties, Cabot and Pioneer, are notoriously hard to root.

"Many cranberry bogs are looking particularly well. The berries are increasing rapidly in size. There have been some reports of insect damage. Early rot has become serious in some bogs, both sprayed and unsprayed, and fungus defoliation of unsprayed young bogs is rather heavy."

George F. Waldo, Corvallis, Oreg.

"A trip was made Wednesday and Thursday," he writes July 24th. "The first visit was made to Puyallup, Wash. where a considerable amount of red raspberry work is being carried on. Dr. Schwartze has some very promising selections of red raspberries, some of which seem to be of commercial value. No. 440, a strawberry selection from the breeding work of this station, was growing better than at any other place where it has been tested. Dr. Schwartze urged the introduction of this selection as a commercial variety. It has for some time been a promising selection for canning purposes.

"The Cranberry Laboratory at Long Beach, Wash. was also visited. Blueberries and cranberries are being tested at this station.

"Another stop was made at the J. J. Astor Experiment Station at Astoria, to note the growth of raspberry, strawberry and blackberry selections being tested there. The Viking variety of red raspberry was the most promising. The Boysen was also doing well; but the Young had considerable leaf spot."

DECIDUOUS FRUIT INVESTIGATION

C. O. Hess, Davis, Calif.

"Dr. King has been working on the chromosome numbers of the material collected this spring," he reports August 10th. "One of interest is Wilma, a plum variety reported to be a cross of P. domestica x P. salicina. Dr. King's count showed the variety to have n = chromosomes, which suggests that it is not an interspecific cross, as reported, or that it was successful because of irregularities in the parents."

On July 17th he had written:"While in Brentwood we looked over the packing plant and the dry yard of the Balfour-Guthrie Investment Co. The dry yard was of particular interest, as it is supposed to be the largest in the world, which I do not doubt. It has facilities for 800 cutters and around 25 to 30 acres of drying space. The total crew, pickers, cutters and others, is 2500. They are housed in five permanent camps maintained by the company.

"The Brentwood section is almost entirely under 15 years of age, and is still in the proving stage. In the last few years sections of the district have been troubled with a high water table, the water-table rising from around 7 or 8 feet in the summer to 3 or 4 feet in winter and spring. In addition to limiting the effective rooting area of the trees there has been, in rather small and definitely defined spots, an excessive accumulation of chloride salts and some boron accumulation. While, in the most affected spots, there are some excess boron symptoms, most of the damage seems to be due to the chlorides, which occasionally reach a concentration of over 4000 ppm. The condition is now becoming serious and steps are being taken to lower the water table.

"In one orchard we visited which is particularly hard hit with this trouble, nearly every tree was affected, many being dead. The orchard was interplanted with young walnuts and there is a small walnut block. It was interesting to note that, although the walnuts showed definite boron symptoms, they did not seem to suffer from the excess chlorides as did the apricots."

He had written July 28th: "It is interesting to note the reaction of the apricot market during the season. The fresh fruit sold at uniformly good prices, most growers averaging about $60 to $70 per ton for shipped fruit, on a basis comparable to the canning prices. The canners started by giving excellent prices in the early sections, averaging about $50 per ton at Winters. However, when they moved into the Bay region the price dropped materially, ranging from $35 to $45. As this is much the reverse of the usual procedure there has been much conjecture among the growers as to the cause. The concensus of opinion seemed to be that the canners had either underestimated the crop or that the Bay region fruit was inferior. There were reports that it was going to pieces rapidly after being picked, and had to be put in the can within a few hours, whereas the Winters fruit was often trucked over 100 miles and still made a very nice pack."

DECIDUOUS FRUIT INVESTIGATIONS

W. W. Aldrich, Medford, Oreg.

Writing from the U. S. Pear Field Station on August 16th, he says: "The Bartlett irrigation plots, both on light and on heavy soil types, are showing some interesting data. These plots were started by A. Lloyd Ryall and me to supplement the results already obtained on the Bosc and on the Anjou irrigation plots. These Bosc and Anjou plots had almost shown that water deficits in the trees delayed the softening of the fruit just previous to and during the harvest period, with the result that the pressure test was not a reliable index of fruit maturity where the trees developed appreciable water deficits.

"This year the Bartlett trees in the 'dry' plots are showing serious water deficits, as indicated by reduced rate of fruit growth and curling of leaves. Pressure test and water content determinations on the fruit are thus far as follows:

Bartlett - Light Soil

Date	Pressure Test		Water Content of Fruit	
	Wet	Dry	Wet	Dry
August 5.....	23.5	27.2	84.64	70.62
" 9	22.4	27.2		
" 15.....	21.1	25.6		

Bartlett - Heavy Soil

August 7	26.0	28.3	84.01	80.16
" 10.....	24.7	27.9		
" 13	24.6	28.0		

"These data for 1937 already show a higher pressure test and a lower water content of fruit from the 'dry' plots, and even greater differences may occur before the picking season is over.

"Commercial picking of Bartlett in the Medford district will start on August 16, which is about 120 days after full bloom. In general pressure tests show most fruits to have reached the top of the pressure test 'range' in which good to very good quality may be expected. However, since my fruit measurements show Bartletts to be growing at the rate of 2.5 percent of their size per day, a delay of one week in picking could be expected to permit from 15 to 17.5 percent greater volume of fruit."

ADMINISTRATIVE NOTE

Payrolls The Civil Service Commission requires a monthly report of employment. We cannot furnish the correct information for this report if payrolls are delayed for a month--or even more. A report coming in during August, covering labor and assistance employed in June is not much help! ALL PAYROLLS SHOULD BE SENT IN PROMPTLY. This not only permits us to meet the requirements of the Accounting Office, protecting the record of the Business Office--but also helps your reputation!

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

C. O. Bratley, New York, N. Y.

"The Gravenstein apple market which opened here the last week in July and is now drawing to a close was most disastrous to all concerned," he reports under date of August 23d.

"The first car on the auction sold for an average of $1.77 per box. Hopes were raised the following day when the second car drew a $2.10 average; but this was the only day of the season when the average rose above $2.00. Auction prices for the first week averaged $1.83, for the second week $1.61, for the third $1.15 and for the last week $1.20. Lowest prices obtained were during the third week when on each of three days some lots sold for 75 cents a box. Since this sum is barely enough to cover transportation charges, the cost of producing, picking and packing came out of the producer's pockets.

"Receivers here feel that the reasons for such poor demand are the high f.o.b. prices asked at the beginning of the deal, the poor condition of the fruit and the competition of 'basket apples', early apples from Eastern States. Early f.o.b. prices of around $1.75 are reported to have driven off the export buyers. About 66 percent as much of this fruit has been exported as at this time last year, and the crop is much heavier. It is certainly true that the early eastern grown varieties such as Wealthy, Gravenstein, Twenty Ounce, Duchess, Wolfe River and Alexander are coming into New York City in much better condition every year.

"About 10 cars of Gravensteins have been placed in storage with hopes of better sales later. This seems highly improbable because of increasing competition of mid-season varieties and because bitter pit will undoubtedly continue to appear on the stored fruit.

"A most important factor is that of condition. Bitter pit has always been found in early California Gravensteins but this year it has been the worst I have seen. Fruits said to be free from bitter pit when packed show from 3 to 22 percent on arrival. In 4 cars which I examined 11, 12, 15 and 10 percent of the fruits were affected respectively. In an occasional box more than half were pitted. The agent of one of the growers' associations arranged the sale of 10 cars to a local dealer who found from 10 to 15 percent of the apples in each car affected. The receivers predict that if something is not done to control this disease the California Gravenstein deal is doomed.

"Another trouble we have been watching is Gray Mold Rot (Botrytis). It is probably of small consequence generally, but in 4 cars examined 2, 7, 3 and 10 percent of the fruits were affected respectively. The decayed fruits were not 'nested' as is often the case with this decay in stored pears, but were scattered throughout the pack."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Practically the entire week ending July 31 was spent in the field in the vicinity of Scholls and Forest Grove, Oreg., taking final results of spraying and dusting trials for the control of walnut blight. Results of these trials give still further proof that the application of a sufficient number of timely bordeaux sprays will reduce the incidence of blight infection on the nuts to an insignificant amount. Thus, in tests carried on in a Franquette orchard near Scholls, Oreg. three applications of bordeaux mixture 2-1-50 (two before bloom and one afterwards) reduced the incidence of infection from about 86 percent to 4 percent. The early prebloom application was apparently very important this year under these conditions, for where it was omitted there was about six times as much blight--26.3 percent. Bordeaux mixture 2-1-50 gave practically as good results under these conditions as bordeaux 4-2-50.

"Results of dusting trials carried on in a Franquette orchard near Forest Grove, Oreg. were also taken during the week. In this region blight was not naturally as severe as in the Scholls district. Under these less severe conditions, three applications (two before bloom and one afterwards) of copper-lime dust (25 percent monohydrated copper sulphate) and a 10 percent red oxide copper dust (90 percent walnut shell flour and talc) gave fair control of the blight, reducing the incidence of infection about one half, from 36 percent to 14.5 percent and 13.3 percent, respectively."

J. R. Cole, Albany, Ga.

"One point of interest to us here is the change that has appeared in making requests for pecan disease control by the growers," he comments in his report for the week ending August 7th. "A few years ago requests came by mail, while now a great number come by long-distance telephone, as well as by telegraph. This has no doubt been brought about as a result of reduced rates and efficiency on the part of the telephone and telegraph companies."

C. L. Smith, Austin, Texas.

"Reports from all sections of Texas and Oklahoma indicate a pecan crop of about 30 percent of that in 1935. The nut case-bearer, walnut datana, and other causes have reduced the crop from a potentially heavy one to this level....In some areas continued dry weather is apparently causing heavy dropping of an already short pecan crop....Further work on rooting pecan shoot cuttings by treating with indolebutyric acid was done the week ending July 24th. The main difficulty we have experienced is in getting the cuttings to continue growth after roots are formed. The trouble is probably due to exhaustion of carbohydrates during the rooting process. We are trying methods of rooting the cuttings before they are detached from the trees.

POTATO INVESTIGATIONS

C. F. Clark, Presque Isle, Me.

"We have experienced an unusually hot summer for northern Maine," he writes August 7th. "Slightly lower temperatures prevailed during the early part of this week, accompanied by showers that have made conditions favorable for the growth of potatoes. A good crop seems to be assured. The former high temperatures, however, have returned at the present writing.

"The hybridization work is practically completed except for a few crosses which may be made between late-planted varieties. Records recently taken of the number of seed balls produced from crosses made up to the present time show that the setting of seed balls this season was unusually low as the result of the hot, dry weather conditions."

HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"The second cutting of head lettuce was made August 5th, these from plants started in the greenhouse and transplanted to the field. Raspberries and blackberries are ripe--a good yield. Finished harvesting caragana seed in the station shelterbelt and completed measurements of growth in the tree spacing blocks."

PROFITABLE CANNERIES

"Five years ago, in the depths of the depression, a few business men in Walla Walla, Washington, set out to develop new business resources that would help their city," says an editorial in Business Week (August 14).

"Taking advantage of the fact that wheat farmers in the region let their fields lie fallow every other year, the business group persuaded the farmers to grow green peas in the fallow year. Green peas supply nitrogen to the soil. The new crop helped the farmers. And it created a great canning industry in the region. Nine canneries in the Lower Inland Empire (eastern Washington and Oregon) now produce one-eighth of the national pack of green peas. This regional industry has grown from nothing in five years. The business men who started this industry have shown the right way to develop a community, a region, or a state...."

----Daily Digest

HERBACEOUS BORDERS

The landscape specialist had been talking to the farm children about the desirability of making the farm home more attractive. At the conclusion of the lecture he asked a few questions to make sure that the children had understood. They seemed clear on all points except one--no one appeared to know what was meant by a "herbaceous border." Finally one of the boys ventured a guess: "Please, sir," he said, "it's a boarder who doesn't eat meat."

ADMINISTRATIVE NOTES

San Francisco-Oakland Bridge. A doctor answered his telephone to hear an excited voice call out: "Come over at once, doctor! My little boy has just swallowed my lead pencil." The doctor hastened to reassure her. "I'll be right over," he promised. "What are you doing in the meantime?" The reply from the tearful mother came promptly: "I'm using my fountain pen," she said.

It really begins to appear as though you'd have to use your fountain pen--I mean in making out receipts for tolls paid over the new San Francisco-Oakland Bridge. As we've told you, Congress authorized the construction of this bridge only with the consent of the Federal Departments concerned, and on the assurance of California authorities that Federal employees and agents would be permitted to pass free over the new bridge. Now, the bridge authorities are interpreting this permission to cover only those employees who are regularly employed or have Government business on Yerba Buena island or within the limits of the eastern and western termini of the bridge.

The argument has been taken up with the Attorney General, but until some definite solution is reached, employees who are forced to pay toll charges must take receipts covering the payments, these receipts to be included in special accounts for transmittal by us to the Accounting Officer so that steps may be taken to secure the refund of your money from the California authorities.

Low Bids. The Comptroller General's office points out that where an automobile, for example, offered by a low bidder meets the requirements of the advertised specifications and the needs of the Government, award to another bidder on the basis of belief that there is only a negligible difference in price more than offset by certain other advantages possessed by the higher priced car, is unauthorized. This is particularly true where the superiority alleged is based upon matters of doubtful value to the Government without consideration of possible offsetting disadvantages. A saving in some instances on the original purchase price of an article might ultimately prove to be an expensive economy.

The question came up in connection with a purchase for the U. S. Geological Survey where the particular conditions and discounts involved found the purchasing agent faced with an opportunity to secure a Pontiac for but $1.08 more than a 60 HP Ford sedan. Because of the higher list price of the Pontiac and Its much higher trade-in-value after 1,000 miles, the purchasing agent thought that car might be a better purchase from the Government's standpoint. However, the Ford car met the specifications and was $1.08 lower in net cost after considering discounts, and by law the Government is compelled to accept the lowest bid meeting all the advertised specifications.

ADMINISTRATIVE NOTES

Domestic Origin. The procedure of filing with a contract a certificate of the contractor as to the domestic origin of deliveries thereunder is not enough. It must be shown that each delivery as actually made conforms with the terms of the act of March 3, 1933, 47 Stat. 1520, concerning domestic origin of materials, etc. In other words care must be taken to see that all the vouchers involved have the "domestic origin" certificate stamped on them.

The difficulty, you see, is that some contractors have been tried and found--er--wanton. That is to say, they cheerfully file a certificate or other statement to prove that the materials they will furnish will be of domestic origin--but when actual deliveries are made later this angle is ignored. So, please see that the "domestic origin" certificate is stamped on all vouchers concerned.

Auto motor Exchanges. The bride was complaining to her grocer about the cake he had delivered the day previously. "There was a fly in the cake you sold me yesterday," she said. "I want you to exchange it for another one." The grocer was quite cheerful about it. "I'll do a lot better than that, ma'am," he assured her. "You bring back that fly and I'll give you a raisin for it."

What I'm leading up to is that the Acting Comptroller General is getting quite reasonable in the matter of exchanges. He says that where a used motor is replaced by a reconditioned motor as a substitute for reconditioning the used motor, there need not be deposited as a miscellaneous receipt an amount equal to that allowed for the used motor in part payment of the reconditioned one--14 Comp. Gen. 796, modified in part--though this ruling does not apply in the case of new motors.

Ordinarily, the exchange of old property in part payment for new is in effect a sale, and the money for the old property is to be turned in to the Treasury Department. Exchanging for a reconditioned motor, however, is not an exchange of old property toward the purchase of new, but merely the substitution of a reconditioned used motor for a used motor in need of reconditioning. No new motor is obtained. In practical effect all that is obtained is the service involved in reconditioning the motor. There is a further advantage to the Government in that the transfer of the motor may be made quickly without keeping the car out of service for days or weeks while the old motor is being reconditioned.

Under existing contracts, of course, there is no difference in cost between the substitution of the reconditioned used motor for the used, and sending the old motor to the shop to be reconditioned and returned. And in either case you get a reconditioned motor--not a new one.

ADMINISTRATIVE NOTES

The Procurement Division of the Treasury has called our attention to the fact that requirements for bulk deliveries of lubricating oil are to be made from Navy Department contracts.

Of course, if your only purchases of lubricating oil are for small lots from service stations, delivered into the crankcase, transmission or differential of your official vehicles, then you are not interested in this notice; but if you buy lubricating oils in lots of 10 gallons or more it must be obtained on Navy Department contracts.

Copies of the Contract Bulletin for the fiscal year 1938 have been sent to most field stations. If you have not received a copy and desire to buy oils in bulk quantities at a large saving from service station prices, request a copy from the Business Office. Many employees of various departments have experienced difficulties in the past in attempting to get proper grades of oil when the contracts indicate only the Navy Engineers' symbol numbers. In order to compare these symbol numbers with the SAE numbers usually familiar to employees, the following comparative table is given (as furnished by Navy Department).

1	2	3	4	5	6
Symbol	Viscosity, S.U.V.		Viscosity-Index (Dean and Davis), minimum	Corresponding S.A.E. Number	
	At 130° F.	At 210°F.		Crank case	Trans-mission
1080	.....	75-90	90	40	80
1100	.....	90-105	95	50	90
1120	.....	115-125	95	60	90
1150	.....	140-160	95	70	90
2075	70-90	.....	.....	10W	.....
2110	90-120	.....	.....	20W	.....
2135	120-145	.....	.....	20	.....
2190	185-205	.....	.....	30	.....
2250	245-280	.....	.....	40	.....
3050	.....	45-55	75	20W	.....
3065	.....	60-70	75	30	.....
3080	.....	75-90	65	40	80
3100	.....	90-105	65	50	90
3120	.....	115-125	65	60	90
4065	.....	65-75	.....	.....	.....
5065	.....	65-75	.....	.....	.....
5150	.....	135-165	.....	.....	.....
5190	.....	180-220	.....	.....	110
6135	.....	120-150	.....	.....	.....
7105	.....	95-110	.....	.....	.....
8190	180-200	.....	.....	.....	.....

The above table lists the oils under headings which may be confusing and, therefore, the following list is given to range the oils in order from the lightest to the heaviest grade.

Symbol No.	SAE Grade
#2075	10-W
#2110	20-W (winter use)
#3050	20-W (summer use)
#2135	20
#2190	30 (winter use)
#3065	30 (summer use)
#2250	40 (winter use)
#3080	40 (summer use)
#1080	40
#3100	50
#1100	50
#3120	60
#1120	60
#1150	70

You will note that the Navy in most cases has two or three symbol numbers under each SAE grade. In most cases these represent oils which flow properly at winter and summer temperatures. If you try a certain grade and find it too light, a heavier grade should be obtained, and vice versa. Excessive oil pressure and excessive gasoline consumption indicate usually that the oil is too heavy. Likewise if the oil consumption is excessive a heavier grade should be used.

In most cases instruction books furnished with new cars indicate the grade of oil to use. These instructions are usually based on the first 10,000 to 15,000 miles, after which the next heavier grade should be substituted.

In placing orders for oil on the Navy contractors, you should remember that containers are charged for in addition to the oil; i.e., if one of our stations in California needed 10 gallons of No. 30 oil for summer use in cars or trucks an order would be placed with the Texas Company, San Francisco, or Los Angeles, under Contract No. 54829; (Item No. 7), 10 gallons of oil at $.35 = $3.50. To this would be added the cost of 2-5 gallon cans, under Item #23 at a cost of $.90, making a total of $4.40, or $.44 per gallon.

In most states the prices are less than the above example. If further information is desired you should write Mr. Gillette.

ADMINISTRATIVE NOTES

Tax Exemption Certificates. An unknown poet--I imagine he must have worked at the General Accounting Office--once wrote: "Here's to the chigger that grows no bigger than the point of a tiny pin! But the lump he raises itches like blazes--and that's where the rub comes in!"

That's true enough in a way, but where the rub actually comes in is this: Not so very long ago you were sent new books of tax exemption certificates, Form 1094; also new identification cards to go with these certificates. It is hoped that most of the employees have familiarized themselves with the use of these certificates by this time.

We have now been informed that Form 1094 has been revised! Wait before you begin scratching! A gentle rub will be sufficient, for the revision is so slight that we have been ordered to use up all of the old forms before any new ones will be furnished. Upon contacting the Supply Division of the Department, it has been ascertained that their supply will last at least another year.

The matter is being called to your attention because of the fact that some of the dealers in gasoline, oil, or other commodities for which tax exemption certificates must be furnished, may call upon our employees to furnish the new, revised, form. In such a case it will only be necessary to write in on your present certificates the desired information that is called for by the new form. For instance, the new form has a space for entering the license number of the car.

Some of the points which it is desirable to call to your attention at this time are: (1) Every space on the form should be filled in so that the accounting officers can readily check the amount of tax, the name and address of the dealer who furnished the tax-free material, the name of the purchaser, etc.; (2) Another provision included in connection with the memorandum on the new form provides that the tax exemption certificate may be furnished contractors for future deliveries of commodities covered by a contract.

The procedure in this latter case is to issue a certificate leaving blank the amount of tax for all deliveries of gasoline or other materials made from a certain contractor during a period covered by the contract. It would be desirable, however, that these certificates be issued for not more than three to six months periods under any circumstances. The general practice of issuing a tax exemption certificate at the end of each month is still desirable, and the other procedure should not be followed unless specifically required by the contractor.

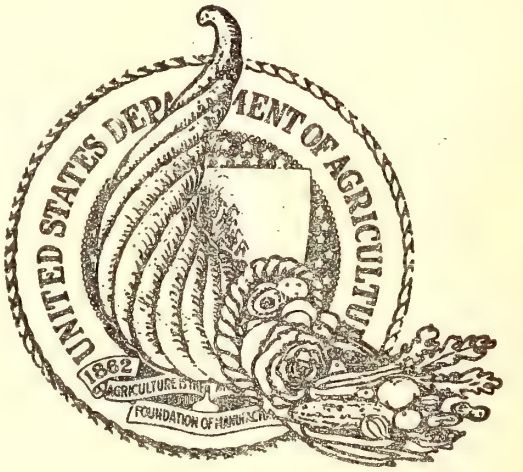
Any questions arising on this matter should be taken up with the Business Office in Washington.

Vol. 9 No. 17 September 1, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., September 15, 1937 No. 18

Bacterial Canker of the Tomato. Discussing an acid seed soak as a possible control for bacterial canker of the tomato, Dr. H. L. Blood writes in Science for August 27, 1937, that the discovery that bacterial canker of tomato, Aplanobacter michiganense, E. F. S., may be controlled by fermenting the fruit prior to seed extraction has led to a study of the toxicity of fermenting pulp to the causal organism. Bacterial canker of tomatoes has caused considerable damage in recent years.

Dr. Blood has made a number of toxicity tests that have demonstrated an unquestionable toxic action of the fermenting fruit pulp upon the bacterial canker pathogen. For example in several of the tests the pathogen was able to maintain its viability in unfermented juices for from 60 to 100 hours--but lasted only from 1/2 to 2-1/2 hours in the 96-hour fermented juices. Analysis of the fermented juices revealed that acetic and lactic acids were the acids formed most abundantly during fermentation and a test of the effectiveness of these as seed soaks was undertaken. The results of the preliminary tests indicate that the acetic acid, when alone or in combination, offers promise as a safe and effective tomato seed soak for the control of bacterial canker. Further studies to establish limits of concentration and effective schedules for the treatment are in progress.

In recent years canneries and seedsmen have been using high speed power machinery for extracting seed from ripe tomatoes without fermentation entering into the process. Prior to the development of modern machinery, fermentation was universally employed to separate the last traces of pulp from the seed. Since the seeds carry the disease a number of experiments have been undertaken with chemicals as disinfectants in the hope of finding relief. In connection with his studies, Dr. Blood discovered that by fermenting the fruit pulp to extract the seeds the disease organisms were killed.

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"The forepart of the week ending August 21 was spent in the field in the vicinity of Salem, Oreg. taking results of dusting tests on the control of walnut blight.

"Results of the tests carried on in this district clearly indicate that dusts of the sorts used are of little, if any, benefit in the control of walnut blight. Thus, in a test carried on near West Salem, Oreg. four applications--three before bloom and one afterwards--of 10 percent red oxide of copper dust (90 percent talc and walnut shell flour) and a copper lime "15" (15 percent monohydrated copper sulphate dust) respectively, reduced the incidence of infection from 61 percent to 53.7 and 53.6 percent, respectively.

"In the light of these results and from results of trials carried on in previous years it appears that dusts of the sorts used to date are distinctly inferior to liquid bordeaux sprays and should not be used in place of liquid sprays for the control of walnut blight.

"The latter part of the week was spent in filbert blight control studies. A test plot in a Barcelona filbert orchard near Woodburn, Oreg. was sprayed with bordeaux 4-2-50. This is the first of several test applications designed to determine (1) if bordeaux mixture will control filbert blight in bearing filbert orchards, and (2) the correct number and proper timing of the applications."

He had written August 14th: "That our spray program in the hands of the average grower will control walnut blight if properly followed is indicated by the results of counts made during the week in a commercially sprayed orchard located near Carlton, Oreg.

"In this orchard the grower thoroughly applied three applications--two before and one after bloom--of bordeaux mixture 2-2-50 plus summer oil emulsion, 1 quart to 100, to his planting at well timed intervals. He left 1 row untreated as a check. Only 4.7 percent of the nuts examined in the sprayed block were infected, while in the untreated section of the orchard 66.9 percent of the nuts examined contained blight lesions.

"In trials carried on in a Farnquette orchard near Stayton, Oreg. 3 applications of bordeaux 2-2-50--two before bloom and one afterwards--reduced the incidence of infection on the nuts from 73 to 10.6 percent. Bordeaux mixture 4-4-50 gave even better results under these conditions, reducing the incidence of infection to 6 percent, but caused appreciably more leaf burn than bordeaux 2-2-50."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"The leaf size records on the trees in the nutritional experiment were completed and a start was made in working up the data," he writes for the week ending August 28th. "The progress in shell hardening and maturity of the nuts of all varieties indicates that the taking of nut-growth data and drop data can be stopped within another two or three weeks. The shells of the Schley nuts are now hard to the base and it is hoped and expected that the heavy drop recorded on this variety will not be much further increased. Some Schley trees are showing at least a 95 percent drop of nuts, while on others the crop has not been quite so seriously depleted.

"The results of this year's budding, in so far as they can be determined at this time, are very good. On many top-worked trees not a dead or questionable bud has been found, the percentage of live buds running close to 90 percent. The results have not been so good with the buds put in sprouts from the stumps of trees in which the old top has died.

"The first small harvest of chestnuts was made this week from two trees. In both instances the nuts and burs separate very well so that gathering the nuts is not the painful task it is with most trees.

"Daily temperatures were high during the first part of the week but dropped to a comfortable degree during the latter part. About two inches of rainfall was recorded.

F. N. Dodge, Robson, La.

"Observations and notes have been made this week as to foliage diseases, foliage color, and nut size in the Cultural Block," he writes from the Pecan Field Station on August 30th.

"It can be seen that spraying with bordeaux has been effective in controlling foliage diseases on the trees of this station. In general, the foliage on the trees in the Bermuda plots is so yellow that those plots can be seen from a distance. This is true even of the plots which have received applications of nitrogen fertilizer in the spring. Some trees in the latter plots, however, are not as yellow as most of the others. It is interesting to note that there are differences in the size of the nuts at this time which seem to be correlated with the color of the foliage. The trees having the darkest foliage have the largest nuts.

"The shells of the nuts of all varieties have hardened at this time."

NUT INVESTIGATIONS

C. L. Smith, Austin, Tex.

"During the week cultivation of the station at Brownwood was begun," he writes August 14th.

"A check-up of foliage condition on trees sprayed with various sprays was made. In every case where trees were sprayed with bordeaux there is a slight infestation of green aphis. No black aphis have been observed, and there has been no apparent damage from the yellow aphis.

"In the dropping of nuts, the Western Schley is the only variety where nuts are still dropping. There is evidently some physiological cause for this which is peculiar to the Western Schley only.

"Reports from the pecan territory of Oklahoma state that the second generation of walnut datana is defoliating the trees for the second time this season. Reliable reports indicate at least 75 percent of all trees defoliated in late June or early July by this insect. A few growers have sprayed for control of the insect and have saved their crops. A few others have kept the datana under control in improved orchards by hand picking.

"Scab seems to be gradually spreading westward. Some varieties not heretofore affected are showing some scab, and the scab is found in some localities where it has not been noted previously.

"A much needed rain fell the first part of the week ending August 21, which should be beneficial to pecans...."

A. H. Finch, Tucson, Ariz.

"Pecan nut filling has started now," he writes August 28th.

"Filling and maturity this year should be quite satisfactory as judged by the condition of vegetativeness of the trees. Growers are irrigating much less through the summer months than was the case a few years ago.

"The Yuma County Pecan Growers have organized a cooperative marketing association. With the total production greatly increased this year over what it has been in the past, it seems likely that there will be harvesting and marketing difficulties inherent to the fact that until now the harvesting and marketing methods have been geared to a rather small production."

U. S. HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

The afternoon of August 23d, Walter D. Roney, junior administrative assistant, was somewhat startled to see 40 automobiles, headed by a motorcycle police escort drive up to the station. Walter thought at first that they had come to take him back to Washington, D. C. to help out the Bureau of Plant Industry bowling team. As it turned out, however, the visit was made to give Masons a glimpse of the station's work, the fraternity's State convention being in progress at Cheyenne at the time.

For that matter, the work at Cheyenne is attracting a good bit of attention and Dr. Hildreth and his staff are to be congratulated on the splendid showing the station is making. On August 25, Bruce J. Thornton, botanist of the agricultural college at Fort Collins, paid a short visit, while on the same day Dr. W. R. Jenkins of the agricultural college at Lincoln, Nebr. spent the afternoon with Dr. Hildreth. On August 27th, Dr. B. L. Wade of the U. S. Regional Vegetable Breeding Laboratory, Charleston, S. C. and Dr. Zaumeyer, W. C. Edmundson and Dr. Raleigh from Greeley, Colo., drove over for a short inspection trip. That same day a group of Laramie County farm women, headed by home demonstration agent, Miss Grace Fuesner, had a picnic lunch at the station and visited the experimental plots in the afternoon. August 28th a group of Goshen county farmers drove in from Torrington, Wyo. about 11 a.m. and after a basket lunch toured the plots with members of the station staff. There were about 50 in the group, headed by G. A. Clowe, president of the Goshen County Farm Bureau, and C. W. Roath, county agent.

"The first sweet corn was harvested the 27th," says the report for the week ending August 29th. "We continued harvesting beans from plots of Dr. Wade's drought resistant varieties and also picked peppers and eggplants. A few tomatoes have ripened and some were collected at the Torrington, Wyo. plots for breeding purposes. The first plums and cherries were also picked during the week--small yields. Oka, Sapa, Wachampa and Tecumseh were best of the plums; Tom Thumb, Zumbra and New Compass best among the cherries."

WE EAT WHAT WE CAN--AND WHAT WE CAN'T WE CAN

Grapefruit in Texas. From nothing to a $750,000-a-year industry in the short period of four years is the amazing record made by Texas canners specializing in grapefruit juice. In the 1933-34 season, 3 plants began canning grapefruit juice by the new methods worked out by Department specialists. These plants bought about $10,000 worth of fruit that season. The following year 7 canneries adopted the new methods and paid $70,000 for 382,558 boxes of fruit. And the 1936-37 season saw 27 plants in operation, spending $750,000 for 2,563,000 boxes of fruit! The best grades of grapefruit will continue to go to the market as fresh fruit, but it is expected that the lower grades will find a market with the canneries, removing them from competition with the fresh fruit.

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

W. T. Pentzer, Fresno, Calif.

"The activities of the Fresno station began this summer with investigations on the handling and shipping of cantaloups from the Imperial Valley," he writes September 4th. "The truck crop section of the University of California at Davis cooperated in these tests. The field work in getting the tests under way was participated in by Dr. Wiant of the New York office, Mr. Barger, Mr. Asbury and myself, and Dr. MacGillivray of the University of California. Mr. Barger and Dr. Wiant and a representative of the Pacific Fruit Express accompanied the test cars from the Imperial Valley to New York. Inspections of test melons on the New York market were made by those accompanying the test cars and Dr. Bratley, Mr. Wright and Mr. Fisher. In the tests this season particular attention was given to the waxing of cantaloups with various types of waxes used commercially. Little benefit was observed from the use of wax, either in retarding ripening or in the prevention of decay....

"Considerable time has been spent during the last six weeks on pear maturity work. A concerted effort is being made this season by pear growers under the Tree Fruit Agreement to insure pears of satisfactory quality being shipped. To eliminate the picking of very early immature fruit, a pressure test was set for Bartlett pears of 21 pounds, with the provision that the pears could be shipped if they showed equivalent maturity either through high color or some other index of maturity. The pressure test requirement was raised to 22 pounds toward the end of the season when there was no longer any likelihood of very immature pears being shipped of this variety.

"The enforcement of the maturity requirement is in the hands of the Federal State Inspection Service, the maturity requirement being part of the grade specifications. The pear growers in the Santa Clara Valley also adopted a maturity standard for shipment of the Hardy variety for the same reason--to prevent the flooding of the market with green, poor quality pears. In the enforcement of the maturity requirement pressure tests were made on the pears in the bins, every size being tested.

"Several complicating factors have been encountered this season. Pears from trees showing hard end have usually been firmer than those from trees without this trouble. This has been of importance only on the Bartlett variety where a considerable acreage has been planted on Japanese stock. Also, the long recognized difference between districts has been observed. The pears in the drier mountain districts develop color, sweetness to taste, and other indications of maturity before they reach the softness of the pears grown in the lower sections. These differences have been taken into consideration by the inspectors and lots passed for shipment if they show what is considered to be equivalent maturity.

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

W. T. Pentzer (continued)

"Grape harvest is well under way in the San Joaquin Valley with all varieties except the late ones such as Emperor and Chanez being shipped. The season is about two weeks late and while some raisin grapes have been picked, most of the crop is still on the vines, waiting for higher sugar content.

"The weather has turned cool during the past week, with maxima below 90°F. I do not believe this pleasant weather will last, and of course the raisin growers hope it will not, for they need fairly warm weather for fast drying before the fall rains come."

MULLET BONES

Those of our workers, particularly those in the section of handling, transportation and storage and market disease investigations, who have had occasion to travel in Florida with J. R. Winston, and been compelled by him to eat fish continually, no matter what their expressed preference for a steak may have been, will undoubtedly feel that the ends of justice have been served by a ruling from the Employees Compensation Commission to the effect that an injury resulting from the lodgement of a mullet bone in the throat of the aforesaid J. R. Winston was not an injury sustained in the performance of official duty.

While the decision does not say so in so many words, it is easy to read between the lines the opinion that the injury was not an accident at all, but simply retribution.

So-o-o-o-o, the next time J. R. is taking you around Florida, order that steak, and if a sudden restraining light begins to show in his eyes, merely hold up four fingers--a gently reminder of the $4.00 it cost him to have that mullet bone removed.

MATURITY TEST FOR PEAS

Food Industries for September contains an article on a maturity test for peas, this being based on Dr. S. L. Jodidi's paper in the May issue of the Journal of the Franklin Institute.

"While this method of testing has been developed primarily to determine the maturity of the raw material for pea canners," says Food Industries, "it has an interest for all who need a simple, rapid and accurate method of determining the specific gravity of insoluble materials for purposes of quality control."

--- Daily Digest

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

Reporting from the Cranberry and Blueberry Disease Laboratory for the two-week period ending August 28th, he writes: "The weather during the first half of the period was warm and dry, the temperature being particularly high from the 19th to the 21st. This intensified the damage in fields that had been suffering from a mild drought, but did not affect cranberry bogs to any extent that could be seen. The week ending August 28, on the other hand, was cool and wet. There was a heavy shower just before midnight on the 21st and beginning at noon on the 22d there were more than three days of continuous rain.....

"Cranberry reservoirs and ditches are full of water but there has been no serious flood anywhere. It is generally felt that the size of the fruit will be increased by the rains and that the coloring of the berries may be slightly delayed. The general harvest will begin immediately after Labor Day.

"The Government forecast of the prospective cranberry crop was published August 26th. The figure given for New Jersey was 135,000 bbls. with the personal opinion expressed by the forecaster that the estimate was too conservative. The growers in general are very optimistic about the size of their crops, but several men who have been very successful in the past in estimating crops still feel that the yield will be considerably below that expected.....

"In our experiments for the control of mildew infection on blueberries it has been impossible to keep a coating of fungicidal dust on the bushes during the past week because of the heavy rains. On the plants to which various chemicals were applied for the correction of possible soil deficiencies, two or three of the treatments caused some slight foliage injury when sprayed on the bushes. There has been no striking change in the appearance of the bushes on any of the plats.

"The prevention of damage by deer to cranberry bogs and blueberry fields continues to be an active subject in New Jersey. One grower alone has legally shot more than 100 deer in the protection of his bogs during the summer. Automatic alarm systems of various types have been tested and some 'electric fences' have been erected. The present opinion seems to be that the only safe protection is a strong fence, not less than 6' high, around the cultivated bogs and fields. Since this entails an expense which neither the growers nor the State feels can be afforded, some other source of protection is being sought."

DECIDUOUS FRUIT INVESTIGATIONS

C. O. Hesse, Davis, Calif.

"An interesting problem has arisen in connection with the handling of the seed of the Miracle and Conquest plum varieties," he writes September 1. "As you may recall, these two varieties are the so-called 'pit-less' introductions of Burbank. The usual procedure here in handling plum seed is to store it in a damp sand-peat moss mixture at 60°F., until it is stratified. This seems to be more satisfactory than storing the seed dry, as they seem to dry out too much and lose their viability. With the naked seed of Miracle and Conquest this procedure is, of course, impractical, as the seed will rot.

"Because we have no information on how to handle seed of this type to best advantage, we are experimenting with open pollinated fruit. Various treatments are being tried, such as holding whole, sound fruit in cold storage, drying the fruit and holding in this manner, and various methods of holding the naked seeds. Until such treatments furnish data for the best practice, we are holding the fruit of our crosses at 32°F."

OUTSIDE PUBLICATIONS

Manuscripts intended for publication outside of the Department (and this includes radio talks, addresses, etc.) must be approved in advance, of course. An original and two carbon copies of the manuscript should be sent to Dr. Auchter through your section leader.

Secretaries to section leaders should remember that such manuscripts are to be transmitted to Dr. Auchter with the usual approval form, copies of which may be secured from our Business Office. Five copies of this form are needed: Original (on heavy paper, is later returned to author with approval for publication), green carbon, two white carbons on form and one white carbon on plain thin paper.

Remember, too, that manuscripts should be headed:

UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Plant Industry

Title _____
By John Doe, assistant horticulturist, Division
of Fruit and Vegetable Crops and Diseases.

This is necessary to insure proper identification and credit when the paper is published. Quite often manuscripts come to us with nothing to indicate that the author is employed in the Division or the Department.

ADMINISTRATIVE NOTES

San Francisco-Oakland bridge

Two dignitaries of the Episcopalian Church and a layman were out playing golf. One rector made a particularly bad shot and the layman looked at him sympathetically. "Don't you ever feel like swearing when you make a shot like that?" he asked. "Don't I!" exclaimed the rector. "Well, I don't swear, but I spit--and where I spit, no grass ever grows!"

I was just thinking if the absence of grass in spots about the ends of the San Francisco-Oakland bridge may not be due to the actions of some of our workers, forced to pay toll charges, and who have vented their anger by spitting rather than swearing. I suppose I shall never know about this definitely, but they have my moral support in any event. This toll matter is getting to be a real source of irritation.

The Director of Finance of the Department gave us a little more information on recent developments, reminding us that in the decision of May 5, 1937, 16 Compt. Gen. 977, it was said:

> "If any employees are actually compelled to make payments from their personal funds for passage over the bridge on official business, receipts should be taken showing such payments were made under protest and such receipts should be submitted with proper administrative reports in support of any claims for reimbursement."

In decision A-82845, addressed to the Secretary of Commerce on August 11, 1937, by the Acting Comptroller General, the requirements contained in the decision of May 5, are modified by the following:

> "It may be further stated in this connection.... that employees who may be compelled to pay tolls from their personal funds for passage over the bridge on official business may be reimbursed by Government disbursing officers, if payment is otherwise correct and proper, where the reimbursement voucher is supported by an administrative statement showing the charges were actually incurred on official business, and by receipts taken by the employees showing that the toll payments were made under protest."

Care should be exercised to see that reimbursement vouchers containing items for tolls covering passage over the San Francisco-Oakland bridge, when submitted for payment, are properly supported by receipts showing that such payments were made under protest, and are further supported by an administrative statement showing that such charges were incurred on official business.

ADMINISTRATIVE NOTES

Glue, ink, and mucilage — One of the best ways to make money fast, of course, is to glue it to the floor. Probably some of our workers find other uses for glue and mucilage also. For their benefit the Procurement Division of the Treasury Department is sending out a warning that all activities requiring ink, mucilage, glue, etc. for shipment to the field, should send in orders for winter supplies sufficiently early to enable shipments to be made prior to the onset of freezing weather. Paste this in your hat--if you have a supply of paste, that is; and a hat.

Retirement — In connection with allowing credit under the Retirement Act for service rendered on a when-actually-employed basis, the Comptroller General's office has ruled that only the actual periods of service of employees appointed and paid on the basis of "when actually employed" who are otherwise entitled to retirement benefits, may be included in "length of service" for the purpose of computing retirement.

This ruling, of course, does not apply to employees who are regularly appointed for contemplated full time service and who are forced into inactivity by lack of funds, weather conditions, or other conditions beyond the employee's control, including leave or furlough administratively approved. Under these latter conditions, credit for so much of such leave of absence as does not exceed six months in the aggregate in any calendar year will be allowed.

The Business Office will advise you when you are in doubt concerning a particular employee or employees.

Tax Exemption Certificates. — Infant Jackie hadn't squawked a squawk during the christening. The minister was both astonished and delighted. "Madam," he congratulated the mother, "your child is the best behaved infant I have ever christened." The mother smiled complacently. "Of course," she said. "I've been preparing him with a watering can for the past week or more."

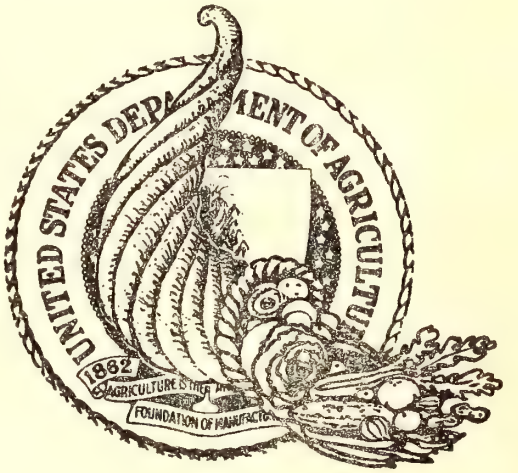
Please understand, I'm not getting personal, but I find that Roy Gillette has been preparing you for some time for the proper handling of tax exemption certificates. His latest effort in that direction is a memorandum entitled "Memorandum Regarding Use of Tax Exemption Certificates," dated August 31, and mailed to those employees who are likely to have to use the certificates. Look this over carefully, follow its instructions, and prove to yourself that it really is better to be safe than sorry. If by any chance you have occasion to use these certificates and have not yet received a copy of the memorandum, ask the Business Office for one.

Vol. 9 No. 18 September 15, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., October 1, 1937 No. 19

Yearbook for 1937

"For more than a quarter of a century I have been building an agricultural library," writes Samuel R. Guard, livestock editor, in Country Home for September. "Recently one of my boys put this poser to me: 'Daddy, if you had to part with all your books except two, which two would you keep?' After thinking it over, my answer is: 'The Yearbooks of the U. S. Department of Agriculture for 1936 and 1937. These two volumes give the basic science of the plant and animal industries, and at the same time chart the course that agriculture must follow in the future.'"

We wish that we could place a copy of the 1937 issue in particular in the hands of each of our workers. It's too expensive for that to be practicable, however, since it contains 1497 pages and is sold by the Superintendent of Documents, Government Printing Office, Washington, D.C. at $2.00 a copy.

This 1937 issue deals, among other things, with garden vegetables, tree and bush fruits, subtropical fruits, flowers and nuts, and so we find the Division well represented among the contributors. The preparation of the papers was assigned to workers specializing in the fields covered, the authors drawing on their own experience and knowledge, as well as summarizing the information obtained from cooperative surveys. The Division has every reason to be proud of the achievements recorded, not only because of what they have meant--and now mean--to agriculture, but of because of what they promise for the future.

DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley, Wenatchee, Wash.

"The Anjou pear harvest is now in full swing," he writes September 15th. "In general, the quality of these pears has been good throughout the district, with occasional fruits showing some cork spotting, although this corking does not seem to be as serious this year as in many of the former years, as nearly as we can observe.

"Mr. Masure and myself plan to obtain yield records in the Cain orchard of Anjou trees which we have planned to use in next year's soil moisture studies. There is an excellent crop on these trees this year and the fruit shows no evidence of premature softening, which was quite bad in this orchard last year. Mr. Cain attributes this to the fact that he sprayed with contact insecticides which reduced the population of a small insect resembling an aphid, although we have been unable to identify the bug which was so prevalent in his orchard last year. It certainly appears as though this little insect has been guilty of causing the spotting and softening of Anjous in that orchard...."

He had written September 8th: "A growing problem of serious importance was quite alarming in the form of premature ripening on the tree. In the early stages of this trouble it appears at the base of the calyx lobes as a pinkish yellow spot which increases in size rather rapidly and finally terminates in breakdown at the calyx end and complete premature yellowing. In Hood River the condition has been termed 'pink-end', but in Wenatchee it is generally referred to as 'yellow-end' or 'soft-end'.

"In the Ray Cain orchard, Mr. Cain estimated that practically one-fourth of his crop was lost because of this trouble. Just now we have no definite leads as to the cause nor any idea as to control measures that might be suggested for next year. Mr. Reeves and myself have tagged a large number of trees and the approximate number of affected fruits from each. We plan to determine the effect of various treatments of these trees on the prevalence of pink-end or soft-end next year. Mr. Reeves has made laboratory studies of Bartletts showing various stages of the disorder and is quite positive from his observations that it is not caused by fungi or bacteria. Secondary fungi, however, find ready entrance at these points after the fruit drops to the ground.

"Our fruit growth studies on Bartlett pears, using our recording instruments, were discontinued today. It was rather interesting to note that during the last few days the fruit continued to enlarge, even though the abscision layer had parted in over one-half of the surface of the connecting tissue and even though there was but a small strand of the tissue connecting the stem of the pear to the spur the fruit continued to enlarge, although not at the same rate as when the union was complete. When taken from the instrument the pears tested 3 pounds with the pear pressure tester."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"The cranberry harvest in New Jersey started generally on the 7th and 8th," he writes September 11th. "Many bogs will still be picked by hand, but the comparatively large crop will necessitate the scooping of a greater proportion of berries than for several years past.

"The collection of cranberry samples from numerous bogs showed a considerable amount of field rot present in many places, while it was found well controlled or almost entirely absent from other plantations. Incubation of the sound berries for one week at a moderately high temperature did not result in the development of a serious percentage of additional rot in any samples."

Writing on September 4th he said: "There was one additional rain that should have been mentioned in my previous report, but the extent of it was not known in time. On the afternoon of August 27th there was a torrential downpour in the east-central cranberry section of the State, mostly along the shore. Unfortunately no rain gauges are located in this area so we have no information as to the amount of precipitation. However, many bogs were flooded and on some of them the water stood for 48 hours or more.

"Cranberry picking will start generally on September 7th. The berries are of good size and some of them are beginning to color rather well. There are indications that the labor problem will be slightly more difficult than in recent previous years, but as yet no definite trouble has been reported.

"Our first collection of berries for the incubator tests have been made. In addition, at the request of the growers, we are attempting to discover whether the flooding of certain bogs from August 27th to 29th injured the keeping quality of the berries.

"Work has been continued on the seedling plantation throughout the week, even though the ground was very wet most of the time. The excess water has drained off fairly well but more rain is in prospect. Grass and weeds on the plantation are practically under control."

John H. Weinberger, Fort Valley, Ga.

"Peach trees in the Fort Valley section are rapidly losing their leaves as result of infection with leaf rust that makes its appearance annually at about this time," he writes September 7th. "The trees in the stock orchard have lost almost half their leaves. An examination of the seedlings in the test orchard showed that none of the crosses are wholly resistant to the disease, though some are more resistant than others."

DECIDUOUS FRUIT INVESTIGATIONS

Claron O. Hesse, Davis, Calif.

"Along with the continuation of the pear seedling harvest and sampling we have started several minor phases of work on apricots," he writes September 14th. "Open pollinated apricot seed have been planted in the greenhouse in order to secure root-tips for Dr. King's cytological studies. In addition we have made plans to treat cuttings of named varieties in the hope of obtaining root-tips for a study of the somatic chromosome complement of the named varieties, especially those used in the breeding work.

"After finally perfecting a technique for the micro-chemical determination of the bitter factor (amygdalin) in the apricot seed we are testing the pits saved from the harvest of the cot seedlings this year in an effort to determine the inheritance of the sweet and bitter factors in the apricot. As most of the apricots are bitter, and very much so, we dreaded the thought of having to test them by tasting. However, we can now go through 40 or 50 in a couple of hours with no trouble.

"During the week ending September 4th, Mr. Day of the Pomology Division brought to our attention a very peculiar fruit that we suspect of being an almond-peach hybrid. The tree appeared among almond seedlings being tested for nematode resistance and was selected from the nursery rows because of its great vigor, it having made a growth three times as great as the normal seedlings in the first year. The tree has mostly almond characteristics, although at a distance it looks like a peach tree. The fruit is intermediate, having the color and pubescence of the almond but being larger and more rounded in shape. The pericarp is thin, but is not dry as in the almond, although it is difficult to define it as fleshy, at least as one things of it in the peach. The 'hulls' of several of the fruits have lain on my desk for nearly a week, but have not become dry, but more like the consistency of dried fruit. The stone is very free, and the inner surface of thepericarp is a deep red color. The stone is more like that of the peach, but looks decidedly intermediate in all its characteristics. The seed is bitter.

"The history of the tree: Seed of a Nonpareil x Jordan almond cross were grown for nematode resistance studies. Open pollinated fruit of selected seedlings of this cross were grown at Delhi. Four seedlings were selected for nematode resistance and one was grafted to a peach at Davis. This tree was surrounded by peaches and the open pollinated fruit from it was planted at Delhi. Of these seedlings a number were selected for nematode resistance, and one was very vigorous, it being the tree in question. We are propagating material for cytological investigation."

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, East Wareham, Mass.

"A check on the percentage of fruit set by cross pollinated flowers of cranberries was made this week," he writes September 11th. "On crosses in which the flowers were pollinated not more than a week after the flowers had been emasculated the percentage of fruits set was good, ranging from 45 to 78 percent. On some other crosses where the flowers were not pollinated until about two weeks after emasculation only a few fruits were obtained.

"Cranberry picking is just getting under way. Most of the berries are not very well colored as yet for which reason they are being left for a few days more on bogs where there is a sufficient water supply to protect them from frost. Many of the berries are smaller this year than normally, due to the very dry weather during the summer. The rain on August 20-21 was too late to bring about any material increase in size. It is probable that the crop will be about 400,000 barrels, as previously estimated."

J. R. Kienholz, Hood River, Oreg.

"The first Bartletts were picked here August 23d and harvest is continuing further up the Valley at present," he writes September 10th. "It was outstanding to note how rapidly this variety began dropping after its proper picking period this year. The Bosc variety is ready to be picked at this date.

"A further check on our pear scab condition revealed that the rain of June 30 was responsible in causing serious late infection in previously clean orchards. Two orchards are at present practically a total loss, and bordering plantings show as much as 10 percent new infection.

"Most of this loss could have been prevented if we were able to obtain copper phosphate as a commercial product. We can neither recommend bordeaux, because of the russet it causes, nor the wettable sulphurs, because of possible burning on the Anjou variety. If this copper phosphate can be obtained at a fairly reasonable price we may encourage its introduction for next year. At the present time it appears that pear scab may be a serious factor in next season's spray schedule. Another rain on August 29-30 makes it evident that much late infection may appear on Anjous just previous to picking. Evidence was also seen that dews may be responsible in some cases for pear scab spread. The trees have been so wet during several of our summer nights that an actual dripping has resulted."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"The apple market is most unfavorable," he writes September 18th. "The Jonathan crop is being harvested and growers report that 40 cents a bushel is the general price. Some very fancy fruit brings as much as 50 cents, but the outlook is very discouraging.

"In spite of the fact that the rainfall has been more uniformly distributed this season than during the past several seasons, the Stayman Winesap crop is cracking badly in many orchards. In this connection, I had a discussion during the week with a grower from Alma, Ark. who reports that his Stayman crop is in good condition at the present time. This is the first year that he did not cultivate the block, leaving the trees 'grow wild' as he expressed it, and he is wondering if this lack of treatment has anything to do with the elimination of fruit cracking in his variety. He plans to follow the same practice next year.

"Examination of the apple drops in the sprayed plots during the week show some increase in scab infections and a marked increase in apple blotch. The plot sprayed the entire season with copper phosphate shows a slight increase in scab, but the material seems to be very effective against apple blotch."

W. W. Aldrich, Medford, Oreg.

"As I mentioned in a previous report, although Bartlett leaves were about 33 percent higher in total nitrogen per unit leaf area than comparable Anjou leaves, the rate of Bartlett fruit enlargement was still no greater than for Anjou," he writes from the U. S. Pear Field Station on August 9th.

"Now, however, since August 1, Bartlett fruit have been growing from 37 to 47 percent faster than Anjou in the 'wet' plot; and from 37 to 47 percent faster in the 'dry' plot. Since there is now only one reliable Bartlett tree in the 'dry' plot, conclusions are risky. Nevertheless, the greater rate of fruit growth of Bartlett than Anjou in the 'dry' plot can hardly be attributed to greater leaf area per fruit following leaf fall of Anjou, since in 'wet' plot Bartlett fruit is growing faster than Anjou.

"In other words, there is a suggestion of greater 'drougth resistance' in Bartlett than in Anjou."

DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"The Panariti (Corinthe noir) 'Zante currant' grape was harvested at the Shafter plot on July 26th, and at the Fresno station on August 16th, nearly three weeks later than the picking date of this variety last season," he reports. "The late harvesting was due partly to the later ripening season this year, and partly to the much larger crop on the vines as they are now approaching regular production age. The ringed vines gave an average production of 5.8 tons per acre on 5-year-old vines. The production varied on the different stocks from an average yield of 2.7 tons per acre on the lowest yielding stock to 7.3 tons per acre on the highest.... The drying ratio of the Panariti, varying with the sugar content, will average approximately 3.25 of fresh fruit to 1 of dried 'currants.' The reported price to the growers this season will be approximately 8 cents per pound of dried currants delivered at the packing house....

"Notes are being recorded daily on the fruiting of the grape seedlings. Interesting data have been obtained on seedlings of standard varieties self-pollinated and of F_2 seedlings of controlled crosses. An additional number of seedlings producing seedless fruit have been obtained. As an example, a black 'currant' type seedless grape was obtained from an F_2 seedling of a previous controlled cross of Alexandria x Panariti. Some early ripening seeded grapes have been obtained from F_2 seedlings of other crosses selfed.... By observations of fruiting vines in the experiment vineyards and in commercial plantings, several interesting and possibly valuable mutations have been located for propagation. While several mutations that have been previously found do not have apparent commercial value, their appearance in plantings does indicate the need of care in the selection of propagating wood for new plantings."

NUT INVESTIGATIONS

J. R. Cole, Albany, Ga.

"In summing up the data for this year," he writes September 18th, "I believe we are safe in making the following statement concerning the Schley variety in south Georgia: Provided there is a bloom of from 80 to 90 percent on the terminal branches, which would be considered heavy, and if the trees are properly cared for, we can produce a crop of Schley nuts here and with the price of 15 cents per pound, tree run, this crop can be made a profitable one. This is true in spite of the fact that we know that approximately 75 percent of the nuts that are on the tree June 1 will have shed prior to September 15. That is why we do not recommend growers to spray their trees unless they have proper fertilization and cultivation as well as a good crop of nuts set prior to the beginning of the spray program."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga.

"The program of the 'Pecan Field Day' at Monticello, Fla." he writes September 18th," was under the direction of Mr. G. H. Blackmon of the University of Florida, Mr. S. O. Hill of the University and the Department, and Mr. P. R. McMullen, county agent. The trip included visits orchards where fertilizer, cultural, and insect and rosette control experiments are under way. The most outstanding points of interest were the excellent crops of Moore and Moneymaker observed throughout the section, a relatively heavy crop of Frotcher nuts on very large and crowded trees, the effect of a very heavy summer cover crop of Crotalaria spectabolis in reducing the size of Moore nuts as compared to nuts on trees with only weeds as a summer cover crop, the beneficial effects on the trees of growing a winter cover crop in addition to the application of commercial fertilizers as compared to trees receiving only commercial fertilizers, and the excellent foliage on Moneymaker trees that received one bordeaux spray about the last of May, as compared to unsprayed trees that were carrying only about one-half as much foliage and that in poor condition...."

He had written September 11th: "Calculations on the drop data on the Moore trees in the McCord orchard, where the clusters were unbagged to permit open pollination at different periods, or were bagged on different dates, has been completed and some interesting results obtained. Nuts that were continuously bagged from April 30 to May 27 all dropped; nuts that were bagged on April 30 or May 1 and the bags removed for 24 hours on May 10, 13, 17 and 20 are respectively showing at the present time 28, 6, zero, and zero percent of nuts remaining; nuts that were bagged on May 11, 14 and 18 are respectively showing at the present time 60, 65, and 69 percent still remaining; and 68 percent of the unbagged nuts still remain. These data indicate that pollination occurs over a period of several days and that this year the optimum period for pollination probably centered around May 8 or 9. This is of extreme interest in view of the fact that Moore pollen was almost all shed by May 1. In this experiment almost if not all the nuts set were cross pollinated. It is likely that future work in controlled pollinations for the study of pollen tube growth and fertilization of the ovules will be planned along the lines of this experiment with a considerable reduction in labor and drop of nuts and with a much closer approach to natural conditions."

"The results of the budding done this year have been very satisfactory," he reported September 4th. "With the unwrapping of all but 5 trees completed an estimate of 95 percent live buds is conservative for the top-worked trees where the usual waxed cloth was used. Where the rubber grafting tape was used not a dead bud was found. The two types of wrapping material were used on alternate shoots on many trees and the comparison, therefore, is accurate....Based on results, even though for 1 year, it is evident that the rubber latex tape is eminently satisfactory...."

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"We are now in the midst of harvesting the almonds from the hybrid trees," he reports September 11th.

"An attempt has been made to get data on some of the young trial plantings of the new creations 8-31 and 8-32. Although none of the trees in the trial plantings are over 4 years of age, and most of them 3 years and under, they are coming through with quite good crops. We are also finding that both of these nuts are very fine to harvest; in fact, they are so easy to harvest that harvesting costs should be considerably reduced when ordinary commercial varieties are taken as a standard. The nuts also hull readily and seem to go through the hulling machines without injury to the shell. It seems probable that the cost of hulling these nuts will be much less than is the case with most of the commercial varieties. Furthermore, the nuts ripen early, immediately following the Nonpareil. This is also a very desirable feature. These hybrid trees are, as a rule, making a very good growth even under somewhat adverse conditions. The foliage is very heavy in comparison with some of the other varieties and the leaves to date have shown a fine color."

Paul W. Miller, Corvallis, Oreg.

"A survey of the blight situation in a number of young filbert plantings in the vicinity of Silverton and Corvallis, Oreg., respectively, was made during the week," he writes September 4th. "This survey revealed the fact that from 5 to 25 percent of the trees in the orchards visited died during the current year. A casual inspection of the dead trees indicated that sunscald or winter injury, or a combination of the two, instead of bacterial blight, has been responsible for the death of many of these trees. "A series of platings from a representative number of the dead trees will be made during the coming week to check up on this tentative diagnosis. In older, bearing Barcelona filbert orchards in these districts few, if any, trees have died. Moreover, twig blight which was so prevalent last year is practically absent in most of the older Barcelona filbert orchards visited. The trees look better than for some years past.

"Bearing Brixnut filbert trees, on the contrary, contain many dead twigs. Platings made from representative dead twigs revealed the bacterial blight pathogene present in some of these dead twigs but not in all. It would appear that several factors or combination of factors are involved. The indications are that winter injury has caused the death of an appreciable number of these twigs. Apparently the Brixnut variety of filberts is more susceptible to winter damage than the Barcelona variety."

U. S. HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"Some 25 pounds of grapes (9 varieties) were picked from the station plots," says the report for the week ending September 18th. "Also one-half bushel of plums were picked from the dry land orchard and one-fourth bushel from the irrigated orchard, this making a total of 1-1/2 and 3/4 bushels, respectively, from the two orchards. About 30 varieties of hardy chrysanthemums are in bloom, and we are now propagating 12 Department numbered chrysanthemum varieties for release next spring."

Walter Roney had reported earlier that showers the first week of September had given the month an excellent start toward its average precipitation of 1.17 inches.

"The hardy chrysanthemums are coming into bloom and asters and other ornamentals in the beds and borders are making a fine display," he reported. "Picking tree seed is under way in the northern nursery and pruning in the spacing blocks has been finished. We planted 60 pounds of chokecherry seed under the overhead system and started fall planting of small stuff in the seed beds.

"Two large porcupines were killed in the shelterbelt near the barn. Ah, wilderness!"

(Editorial Note.--That last statement gave us quite a shock at the time, as we knew Dr. Magness and Carl Schoenhals were planning to visit Cheyenne. Fortunately, as it happens, they shaved before approaching the station! So we mention the matter now merely as a warning to other workers who may be planning to visit the Cheyenne station. JAF)

THE KATAHDIN POTATO

"The greatest contribution by the Sandpoint substation to potato production in the past two years has been the distribution of Katahdin potato." writes Ralph Knight, superintendent of the Sandpoint Substation, Idaho Experiment Station, in the University of Idaho News Letter for September.

"This variety is quite resistant to certain forms of the potato mosaic disease," he continues. "Some of the old varieties, particularly the North Idaho Rural and Gold Coin, became so badly infected with mosaic that a good many growers were requesting some variety to replace them. Approximately 5,000 pounds of the Katahdin variety were distributed from this substation for planting in 1935, and in 1936 the distribution was quite general. Growers as a whole have expressed a good deal of satisfaction with this variety....The Chippewa variety, which is also resistant to some forms of mosaic, has been very promising the past two years, and the seed supply is being increased."

NUT INVESTIGATIONS

F. N. Dodge, Robson, La.

"Excellent control has been obtained where we have sprayed, however, aphids are now beginning to do damage on the trees we have not been able to spray as yet," he writes September 20th. "The exception to this is the trees in a more or less isolated block which received no bordeaux. These trees have no aphids.

"Stuart trees which were not sprayed with bordeaux are losing some of their leaflets because of Vein Spot. They are, however, not losing as many leaflets because of black aphids as are the bordeaux sprayed trees. The end result apparently will be that the bordeaux sprayed trees will lose more leaves than will the trees not sprayed with bordeaux. This could have been avoided if it had been possible to have sprayed for aphid control soon enough....The northern varieties of pecans are now ready to harvest."

ADMINISTRATIVE NOTES

Don't Freeze Up! says Ray Jones. And he goes on to tell us that the Forest Service has entered into a contract with the National Carbon Company, 30 East 42d Street, New York, N. Y. for supplying anti-freeze solution for automobiles. A clause has been included in the specifications reserving the right of the Department to place orders for any additional amount required at the prices set forth in the bid--and that such orders for anti-freeze shall be issued not later than December 1,1937.

Particular attention is called to the fact that this material is furnished only in case lots, 6 gallons to the case. The price per gallon in case lots of 1-gallon containers is $1.51, fob any railroad freight depot in the United States; while the price per gallon in case lots of 1/2-gallon containers is $1.53 per gallon, fob any railroad freight depot in the United States.

Discount for payment promptly is 2 percent, 20 days. Our field stations may place their orders direct with the contractor if they so desire. However, if their requirements are for less than case lots they should send their orders to us immediately and we will consolidate them, having the material shipped to Washington, D.C., and then forward to the various stations the quantity needed.

This, of course, will entail a small additional transportation charge from Washington to points of use, but even so a considerable saving can be made by taking advantage of the contract prices on the case lots as the commercial cost of this material is about $2.70 to $3.00 per gallon. The product contracted for is "Everready Prestone," one of the best on the market. The contract number is U.S.D.A. 286; AIS-15959, accepted September 10, 1937.

ADMINISTRATIVE NOTES

Radio The Department has for some years made excellent use of the radio in connection with the prompt distribution of information. Recently there have been proposals to the effect that Department programs should be sponsored by commercial firms, or that new informational programs should be started with advertisers paying for the time, and the Department and other Federal and State agencies providing the official information.

Broadcasting under such arrangements would, as the Acting Director of Information points out in a recent memorandum to chiefs of bureaus and offices, violate Department Regulation 1215, prohibiting endorsement of commercial products by Department employees, and Regulation 1231, prohibiting the appearance of Department employees in commercially sponsored radio broadcasts except for the issuance of emergency information on such matters as forest fire control.

Under the circumstances, employees of the Division are cautioned against appearing on commercially sponsored radio programs, or supplying information exclusively for such programs. Commercial firms, of course, are entitled to the publications of the Department, just as are any other citizens, but they are not entitled to supplant or interfere with either radio or press in disseminating information prepared and issued by the Department as a public service.

If you have the least doubt about any proposition of this sort put up to you, get advice from Washington before acting.

Gasoline With reference to the questionable propriety of accepting deliveries of materials or supplies prior to the issuance of purchase orders to Government contractors, the Acting Director of Procurement, Treasury Department, writes to heads of Departments and Establishments as follows:

> "It has come to the attention of this office that certain field activities purchasing under term contracts entered into by the Procurement Division for gasoline, etc., have been requesting deliveries prior to the issuance of purchase orders, which results in a delay in vouchering accounts and issuance of tax exemption certificates, as well as the expense incident to additional correspondence for the purpose of identifying items and determining purchase order numbers covering the same."

Present field procedure should be modified, wherever necessary, to correct the objectionable practice mentioned in so far as it may now exist.

ADMINISTRATIVE NOTES

Vendor's Certificate

In connection with vendor's certificate to support Government vouchers (standard form 1034-revised), the Comptroller General's office points out that pars. 3 and 4 of General Regulations No. 51, June 18, 1926, provide:

> 3. The original voucher must be signed and certified to (except as provided in par. 4, following) by the payee, or by his duly authorized agent, and by the proper administrative officer of the department or establishment concerned who is cognizant of and may truthfully certify to the facts stated in the voucher. When the orginal voucher has been accomplished and paid by a disbursing officer, it will be transmitted to the General Accounting Officer with the accounts of said disbursing officer as required by law.
>
> 4. If a payee submits for payment an invoice or bill on which is contained the certificate, duly signed, "I certify that the above bill is correct and just, and that payment therefor has not been received," or words to that effect, said invoice or bill may be accepted, if it constitutes a valid claim against the Government, and fastened securely to the voucher (Standard Form 1034), in lieu of stating the invoice or bill in detail and securing the payee's certificate thereon, the voucher to be otherwise completed in due form. In such case, the invoice or bill should be described on the voucher sufficiently to identify same and the amount or amounts carried to the "Amount" column. More than one invoice or bill of the same payee may be attached to and paid on a single voucher provided the transactions are under the same agreement and/or under the same conditions as to method or absence of advertising, etc.

It is reported that in recent months a practice has developed in certain departments and establishments of procuring the vendor's certificate on a separate sheet of paper to be attached to the original voucher, and that at least one establishment has printed a form of certificate for that purpose. Under the regulations, the vendor's certificate may be executed on the original voucher in the space provided therefor or, in lieu thereof, such certificate may be endorsed across the face of the vendor's original bill of sale or invoice. Variations from these methods of securing the vendor's certificates are not authorized and may result in a suspension.

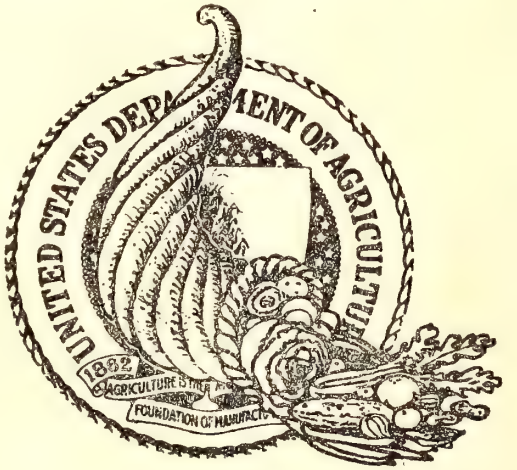
In this connection reports of inspections in the field by representatives of the Comptroller General's office disclose that frequently vendors' invoices are furnished in duplicate, triplicate, and even quadruplicate, on each copy of which the vendor has certified to the correctness thereof and that payment therefor has not been received. In view of the possibility that such certified copies of invoices might be improperly used as bases for claims against the United States, attention is called to the fact that the vendor's certificate on any Government voucher or on an original invoice intended for attaching to a Government voucher must be signed in original only.

Vol. 9 No. 19 October 1, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D.C., October 15, 1937 No. 20

Agricultural G-Men Praised

A rather unusual tribute to the lasting achievements of the United States Department of Agriculture is given in the Digest for October 2, 1937, apparently based on the 1937 Yearbook. "Quiet, highly meaningful work is proceeding," it says of the activities of the Department. "All can be thankful that experts in such labors try to do things in ways hitherto unknown to Nature. Research is constructing new plant and animal mechanisms with which man can control his future....

"The wilt-resistant Marglobe tomato is developed just in time to save Florida producers from ruin," goes on the comment, touching on some of the highlights of the work of our own Division. "California growers are finding vital importance in lettuce that resists brown blight and powdery mildew, and in cantaloupes that are immune to powdery mildew. Sweet corn has been given such uniformity and quality as to remake canning practices." Vines, bushes and trees are fruiting more palatably with improved strawberries, raspberries and oranges, it declares.

"China, Japan, India, are supplying American cucumber growers with solutions to the problems of heavy losses from bacterial wilt, from mosaic disease, from downy mildew. These new strains are by inbreeding, forced into more perfect immunity and are now being crossed with good American varieties....

"India, again, solves a problem of the Imperial Valley district of California, of Rosa of the California Agricultural Experiment Station, and of Jagger of the United States Department of Agriculture. The Valley, America's main muskmelon section, was menaced a decade ago by powdery mildew. A commercially valueless Indian variety of melon is mated with valuable American stock; hence Powdery Mildew Resistant Cantaloup No. 45, and, on the way, resistant strains of Honey Dew and Honey Ball.

"More than a billion pounds of onions go into American mouths annually--meaning $17,000,000 to growers. And for all the onion's odoriferous potency, it is troubled by many enemies--pink-root, smut, mildew, smudge, neck rot, yellow dwarf; by thrips, and by premature seeding. Now the Nebuka from Nippon is on the scene, with disease-resistant and insect-resistant characteristics that are being bred into the commercial American species.

"Having taken the string out of the string bean, our agricultural G-Men track down the secrets of the bean's major afflictions, such as rust, a fungous attack. Already beans are being released from tribute to Nature's tiniest criminals, and attention is being directed toward snappier beans.

"Yellows, or fusarium wilt, threatened to terminate the cabbage's four millennium-old history. But this history may well continue additional, unguessable milleniums; the risk of wilt is no longer a pitfall for cabbage's forward march."

Incidentally, an editorial comment in the Department Yearbook for 1937, points out that this single piece of work in creating yellows-resistant cabbage varieties saved the cabbage-growing industry in many sections of the country and brought an enormous return on its cost. The work, of course, was started in Wisconsin back in 1910 by Dr. L. R. Jones, and has been continued through the cooperation of Dr. J. C. Walker and his associates to develop varieties resistant to the devastating cabbage yellows or fusarium wilt. These workers have given us an amazing illustration of the possibility of tailoring varieties to order, for they have produced yellows-resistant varieties of all the major types of cabbage demanded by the market!

But to continue with the Digest's comments: "Vitamin-rich celery, endive, parsley, as well as lettuce....The lowly beet, the pallid potato--they have their troubles, too, but these troubles are being removed at a steady, swift pace.

"Unfamiliar importations are fascinating," declares the Digest, referring to the statement by George M. Darrow and Guy E. Yerkes that opportunities for plant breeders may be found in plants not at present generally cultivated in this country. "The tartness of the goumi from Asia is tasty in sherbets. The Chinese bush berry, also called Manchu cherry, wins attention by its attractive tang and pleasant range of flavor and texture; promises commercial value. In come, also, formerly unknown apricots from Manchuria and Siberia, probably to widen the range of cultivation of this fruit, grown chiefly on the Pacific coast and susceptible to spring frosts.

"Meantime, citrus growers rejoice in higher vitamin C content, higher dessert quality, closer approximation to seedlessness, comelier symmetry, firmer pulp for canning, more attractive juice-color. So the nation's health also ascends...."

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

"We are in the midst of harvesting the almonds from the breeding tract at Davis," he writes September 25th. "I have continued the study of the trial plantings during the past week, special attention being given to the yield in the coastal regions from Santa Clara Valley southward to Paso Robles. It was found that three-year-old trees and two- or three-year graft of 8-32 and 8-31 were bearing very heavily in all the districts. In the coastal regions both are ripening at the present time and will be ready for harvest within the next week or 10 days. In some localities they have already been harvested. Examination of the nuts on the trees shows that 8-32 possesses various outstanding points of merit. The apparently heavy bearing habit of the variety, the distribution of the nuts throughout the tree, the exceedingly fine harvesting and hulling qualities of the nuts, and the large size of the nut and kernel are very important points from the grower's standpoint. Considerable expense will be saved in the harvesting and hulling of these nuts and this fact, taken together with the heavy yield of the trees, indicates that the growers will be able to produce this nut at a much less cost per pound than is the case with most of the common commercial varieties.

"The commercial almond orchards throughout the coastal regions are coming through with heavy crops, although in some instances orchards are bearing light. The average for this region will be good and certainly much better than last year.

"Some of the artificially pollinated walnut orchards were examined and these were producing very good crops. This seems to be especially true of the Payne and Eureka varieties. However, in some of the districts the walnuts are coming through with big crops without artificial pollination. In most of these orchards the interplants are such that the period of overlapping of the different types of blooming was most satisfactory. It was noticed that in many orchards there was considerable sunburn and many of the walnut kernels were defective. In some orchards blight was very bad and will reduce the crop at least 50 percent in certain limited sections.

Max B. Hardy, Albany, Ga.

"Nuts of the Moore variety are maturing rapidly with many of the shucks already split and open," he writes from the U.S. Pecan Field Station on September 25th. "A few Schley nuts with shucks opening have also been noted, but for the most part are nuts with a considerable amount of scab on them. As the season progresses the degree of filling of the nuts in this section is looking better and better and this factor will play a part in increasing the tonnage of nuts produced. One of the local distributors is predicting at least ten million pounds of nuts for Georgia this year."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Final results of walnut and filbert blight infection studies carried on under controlled greenhouse conditions during the course of the past spring and summer were taken during the week ending September 8th," he writes.

"Among other things the results of these current studies show that the infection of walnuts by Phytomonas juglandis can take place just as soon as the pistillate flowers form on the new growth, even before the outer leaves of the opening buds part sufficiently to visibly expose the pistils.

"The results of current greenhouse studies on the infection of one-year-old twigs and older branches on potted filbert trees by the filbert blight pathogene were predominately negative. The explanation for these negative results is not at all clear, for in the field the filbert blight bacterium produces large cankers on one-year-old twigs and larger branches of young trees. It would almost appear as if there were some predisposing factor or factors operative under field conditions that do not operate under the more artificial greenhouse conditions."

A. H. Finch, Tucson, Ariz.

"Some of the early varieties that are being harvested experimentally are showing quite satisfactory kernel quality although the shucks are not yet opening well naturally," he writes September 28th concerning pecan investigations in Arizona. "Ethylene is loosening the shucks nicely. It appears that loosening can be accomplished by placing the nuts in a pile, covering with canvas and introducing the ethylene."

F. N. Dodge, Robson, La.

Writing from the Pecan Field Station on September 27th he reported that the shucks on Moores were beginning to open. "Nuts seem to be maturing better than a week earlier than they have the past two years," he added.

C. L. Smith, Austin, Tex.

"Pecan crop reports indicate a production in Texas of about 24 million pounds, with less than a million pounds of the improved varieties," he writes September 25th. "Seedling prices at present are about 6-1/2 cents per pound, with only a very few early ones ready for the market."

DISEASE-RESISTANT TOMATO VARIETIES

During the World War a very patriotic old lady was passing a farmer's barn one day and observed a young farmer boy milking a cow. He looked to the old lady to be old enough to be in the army, and she was indignant to find him on the farm. He saw her, but didn't stop milking. "Why aren't you at the Front?" asked the indignant patriot. The boy's reply came promptly. "'Cause thar ain't no milk at that end," he said.

Ain't it the blessed truth--you've got to know where the milk is, to begin with. I've just been thinking that Fred Pritchard and Bill Porte must rank mighty high in the list of those who know how to go about getting results, with cows or tomatoes. I'm thinking that because I've just been told that the Marglobe tomato has now reached the top of the heap--it is not only the most important tomato in the United States, it's the best in the world--and that's covering a lot of territory!

Yes, Fred and Bill started a real dividend producer when they made that Globe-Marvel cross in our greenhouse here some 20 years ago. It was an emergency operation, you understand, because the tomato shipping industry down in Florida was failing rapidly. Well, the Marglobe saved its life--and then from being a mere stop-gap shipping tomato the new variety went on to become the principal canning variety in the Middle Atlantic and South Atlantic regions. It was, too, the dominant variety in Mexico during the heyday of the tomato-shipping industry there; it is one of the highly recommended varieties in Australia; and it is listed by commercial vegetable seedsmen in many foreign countries. Yes, it is not only an excellent early midseason home-garden, market-garden, and canning variety, but it is of course highly resistant to wilt under most conditions--and to nailhead rust under any condition it has so far encountered.

Good as it is, the tomato-breeding workers appear to have one or two other varieties that may give it a battle for the honors. The Pritchard itself, while not considered a canning variety at first, is being used more and more each year for that purpose, and is especially popular because of its superior scarlet color. The Glovel, Marglobe's sister, is not only a high-class tomato but cracks much less than the Marglobe.

Out in California Lesley and Shapovalov appear to have something in their new Riverside tomato, a variety that has demonstrated resistance to both Fusarium and Verticillium wilt. It, too, is suitable for both fresh consumption and canning, and is remarkably free from cracking, especially star cracks.

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffmann (Vegetable Crop Investigations)

"Vine growth in both the sweetpotato variety and variation blocks continues," he writes September 18th, "in spite of dry weather, to be very heavy. In many places in our plots, Porto Rico foliage is 12" to 16" deep.... The asparagus plant tops on the blocks to be fall cut were checked as to sexes, cut, stalks counted and total plant weights taken. Sex expression is yet not evident in more than 33-1/3 to 50 percent of the individuals. Final observations seem to suggest that clearly expressed male plants have a greater number of stalks and a greater total stalk weight per plant than does the female plant.... Observations made on a small planting of Lookout Mountain white potatoes growing in close proximity of the station indicate a very satisfactory stand and good growth alongside other varieties that have done almost nothing."

N. H. Loomis (Small fruit investigations)

"During the past week grape seed was collected from 79 separate crosses and also self-pollinted seed of 5 varieties," he reports September 18th. "In these crosses 13 varieties were used as female parents, including one pure rotundifolia; and 23 varieties were used as male parents, including 6 vinifera varieties."

Atherton C. Gossard (Nut Fruit Investigations)

"A large part of the week ending September 18th was spent on a trip to pecan-growing sections and to experiment stations in Alabama for the purpose of studying pecan orchard conditions and obtaining information for use in setting up and carrying on experiments in pecan production at the Meridian station. Good crops on non-scabbing and mildy scabbing varieties and fairly good orchard conditions were found in the Selma, Montgomery, Camp Hill, Ft. Deposit, Irvington and Theodore sections. Cutting the nuts with a knife (most shells were not too hard for this) indicated that filling may not be perfect but, for such heavily loaded trees, unusually good. Scabbing varieties had generally set good crops, but the nuts have been injured or destroyed by scab. Well cared for orchards in Mobile and Baldwin counties have set good crops of nuts, but the trees in neglected orchards have so deteriorated that either no crops were set or the nuts have fallen off. The Irvington and Theodore sections, mentioned above, which have an especially heavy crop, are in the southern part of Mobile county.

"An experiment on pecan rosette, which was started near Grand Bay, Ala. during the existence of the Spring Hill Pecan Field Station, was visited and notes taken on it. The differences, previously striking, between rosetted trees that were not treated, have become much less noticeable.

Atherton C. Gossard (continued) (Pecan Rosette)

The most interesting point in this regard is that the treated trees have not gone back to a rosetted condition to any appreciable extent, but that the other trees have improved without having had any zinc applications. The suppositions are that oyster shell meal applied to the soil some 10 or 12 years ago, which is given credit for having brought about the rosetted condition, is beginning to lose its effect, and that the trees are now gradually making a natural recovery."

U. S. HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"The first killing frost of the season occurred the early hours of September 24th, living up to the long-time average date as given by the Cheyenne Weather Bureau. Following balmy weather the forepart of the week, the thermometer dropped to 27 above. The first snow of the season started about 4 p.m. on September 24th, leaving a light coating the morning of the 25th, which is all gone now--September 25th. Furnace fires in office and dwellings were started the 24th.

"All tender crops in the varietal plots were killed. Cabbage, celery and root crops were uninjured."

POTATO INVESTIGATIONS

C. F. Clark, Presque Isle, Me.

"The harvesting of the commercial potato crop is well under way," he writes October 2d. "A few growers are reported to have finished.

"Chippewa appears to have been the highest yielding variety in this vicinity this season. Good yields have also been obtained from Irish Cobbler, particularly on fields that were planted early. The yields of Green Mountain have been somewhat lower than usual. This is attributed to the hot, dry weather conditions that prevailed during the early period of tuber development.

"The Farmers' Cooperative starch factory has started operations. Nearly 3,000 bushels of potatoes are being ground daily, which yield approximately 10 tons of starch."

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

"A new dendograph made of brass by a local machinist was set up on a peach tree trunk the week ending September 18th," he writes to Dr. Cullinan. "In the 4 days that growth was recorded, practically no net increase in trunk diameter took place. Daily variations were observed; that is the trunk was larger at night than during the day. Apparently the few leaves remaining on the tree were transpiring sufficiently to affect the internal hydro-pneumatic system of the tree. It was not anticipated that cessation of growth would occur so early in the year, however."

DECIDUOUS FRUIT INVESTIGATIONS

G. A. Meckstroth, Willard, N. C.

"During the past week I spent three days with Dr. C. A. Magoon in going over the Muscadine grape plantings at the station," he writes from the Coastal Plain Station September 25th. "We went over the block of seedlings and continued the selection work of promising vines that was started last year. Some of the seedlings are bearing a good crop of exceptionally fine fruit and these will be kept for further study.

"We made a few observations on the diseases in the Muscadine variety collection. Some varieties are much more resistant to the common diseases than others, and I am making a more detailed study of this entire block to note the differences among these varieties in their susceptibility to the more common diseases.

"The most common and destructive disease probably is the leaf blight due to Cercospora. In the extreme form this defoliates the vines prematurely and many of the leaves which are still adhering are turning yellow with large dead areas. There is also present in a good many varieties a chlorosis, the cause of which we do not know. Some varieties are entirely free from this, while others are very badly affected.

"The most common fruit rot is bitter rot, due to Melanconium. This bitter rot is easily confused with the black rot when the berries have dried down, but by careful examination with the hand lens they can be readily distinguished. However, in certain stages of the fungus it may be necessary to examine the material under the microscope. Some varieties appear to be almost free of this bitter rot, while in others it apparently has caused the destruction of the greater part of the grapes. They are now still adhering on the vines as dried down mummies.

"The black rot, due to Guignardia, is found on the fruit of some of these varieties, while others are entirely free. The leaves of most of the varieties are affected more or less, some varieties being badly affected. In a few varieties the fruit was badly affected, causing warty swellings all over the young as well as mature fruit. These blister-like warty swellings bear the pycnidia in large numbers.

"We did not find any Isariopsis blight in the Muscadine varieties, but this appears to be confined to the hybrids that are the result of a cross between Muscadines and the bunch grapes. In this block of hybrids the vines that show the hybrid character are badly affected. This blight results in irregular dead areas scattered throughout the leaf and is readily distinguished from the black rot leaves that are more or less circular in outline."

DECIDUOUS FRUIT INVESTIGATIONS

W. W. Aldrich, Medford, Oreg.

"The pear growers of this district have just become aware of the fact that their yields this year would fall far short of their July estimates," he writes from the U. S. Pear Field Station on September 13th. "It would seem that three factors are largely responsible for the pear production being lower than anticipated: (1) Whereas there was a fair crop on the exposed, distal portions of the limbs, there were very few fruits in the centers of the trees (our total tree and limb fruit count had already brought this fact to our attention); (2) Omitting irrigation in June and in early July as a blight control measure checked fruit growth more than growers realized (our fruit measurements in non-irrigated plots showed us this feature very clearly); and (3) More fruit was injured by pear scab and by codling moth than was expected. It is too early to estimate the exact amount of reduction of crop below July estimates.

"It is now evident that 1937 is a year of relatively serious dropping of fruits just previous to harvest. Unfortunately we do not have planned experiments to show possible relations of this fruit drop to environmental or nutritional conditions of the trees. However, it is my guess that much of dropping of uninjured fruits is due either to seedlessness or to low vegetative vigor of fruits resulting from the cold (30-45°F.) weather during the four to six weeks after full bloom.... Whereas Mr. Work's soil moisture data comparing alfalfa and clean cultivation plots have not been tabulated, it is evident from tree appearance that Anjou trees in alfalfa experienced serious water deficits much sooner after irrigation than trees under clean cultivation.... The 1-1/4 percent oil used with lead arsenate sprays on July 22 and on August 14 caused severe burning of leaf tips again this year. The only experimental plots relatively free from this leaf burn are Frequent Late and Moderate plots. The most severe injury occurred in the alfalfa half of Frequent Early. It would appear that two factors contributed to the susceptibility of Anjou to this spray burn: (1) High available soil moisture during the five-week period following full bloom; and (2) Appreciable water deficits in the trees as a result of low available soil moisture during late August."

Writing on September 6th he said: "Dropping of Anjou leaves from trees in Plot G, which started about August 2 as a result of severe water deficits, had continued until from 50 to 75 percent of the leaves had fallen by September 6. Nevertheless, Anjou fruit enlargement was continuing at a rate of .6 to .8 cc per fruit per day. The rate of fruit enlargement of Bartlett under similar soil moisture conditions (Bartlett had not lost any leaves as a result of water deficits) was about twice as great. Under conditions of high available soil moisture, the rate of fruit enlargement of Bartlett was about 20 percent greater than that of Anjou. This might be due, at least in part, to the 33 percent greater nitrogen content per unit area of the Bartlett leaves."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"The cranberry harvest is proceeding satisfactorily," he reports October 2d. "Most of the Early blacks have been harvested. Because of the fairly large crop, most growers are either scooping all of their berries or are employing both scoopers and hand pickers. In the latter case, scooping has been generally suspended in order to slow up the harvest slightly and give the late berries time to color more completely. So far as we have heard, only one large grower has entirely finished his harvest; only scoops were used by this grower. No losses have been reported from the light frost of September 30th....

"The harvested berries continue to show a considerable amount of field rot. The market demand being good, most owners are sorting and shipping their berries as soon as possible after picking. Where the fruit is of obviously poor keeping quality, it is being sorted and hauled to canning factories for immediate use. The single grower who has completed his harvest reports that he scooped about 10 percent above his original estimate, but that he does not expect to be able to market more than 2/3 of the berries scooped, because of rot. A small grower, who has also finished harvesting his fruit, reports his loss from rot at more than 50 percent. Other large growers have not reported, but we know from inspection of their berries that their losses will be large. Certain sections of the State, on the other hand, have relatively sound fruit."

H. F. Bergman, East Wareham, Mass.

Writing from the Cranberry Disease Field Laboratory on September 24th he says: "Picking has been somewhat delayed this year as the berries have been slow to color. Most of the Blacks now, however, are well colored and picking is progressing as rapidly as weather conditions will permit. There are many reports that the yield of bogs is exceeding the estimate, probably due to increase in size of the berries as a result of rains we have had quite regularly since August 20."

John C. Dunegan, Fayetteville, Ark.

"Bitter rot was found in two orchards examined during the week ending October 2," he reports. "Since these two orchards have been infected with the disease since 1932, the occurrence on the fruit again this year indicates that the fungus has survived the droughts of the past few years. Both orchards, it should be noted, are neglected and receive only an occasional application of spray, and under these conditions the disease is destroying at least 90 percent of the crop."

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

James S. Wiant, New York, N. Y.

Writing from the New York City Market Pathology Laboratory on September 28th, he says: "Charcoal rot has been recently found in several cars of California Honey Dew melons. Although of common occurrence in melons imported from Chili during winter months, only twice previously (once in the field and once on the market) has the decay been recorded on domestic melons. This is rather surprising inasmuch as the fungus (Rhizoctonia bataticola) responsible for the decay is fairly widespread and attacks a wide variety of different plants.

Melon Notes

"Honey Dew melons which were unloaded at New York 17 days after loading in California have been found seriously affected with irregular water soaked spots, symptoms indistinguishable from those of low-temperature breakdown previously observed and described on melons held in cold storage.

"A few carlots of California Honey Dew melons have arrived with a high percentage of the melons showing flesh cracks or splits. In a single car 15 percent of the melons were so affected. The splits which extended nearly to the seed cavity were from 2 to 6 inches long, with one or two occurring per melon. All available evidence indicates that the injury occurred after the melons were packed and probably during transit. We have not observed this in previous years although others report that a few split melons are seen each season.

"The first of 7 cars of Idaho Honey Dew melons arrived in New York City in a very immature condition. After one week holding here they were still much harder and greener than any lots ordinarily received on this market. So far as we know these are the first Idaho Honey Dews received in New York City.

"Winter Queen watermelons which ordinarily are regularly received from Colorado during September and October have not yet appeared on the market. Packed in crates with excelsior padding, these melons are handled like Honey Dews, which on superficial external examination they somewhat resemble. New York City carlot receipts kept separate for the first time showed 13 cars in 1928. A peak of 36 carlots occurred in 1931. Since then they have fallen off until last season only 7 carlots arrived, all selling on a low market. Information from the field indicates that at least a few cars will be shipped this season. Our interest in the melons is centered chiefly in their susceptibility to Phytophthora rot which has been observed in serious degree during the past two seasons."

Vol. 9 No. 20 October 15, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

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Vol. IX Washington, D. C., November 1, 1937 No. 21

Fashions in Fruits and Vegetables

Quite often we decide that the breeding of resistant varieties of fruits and vegetables is the only satisfactory method of combating certain diseases--and then we come face to face with the fact that some diseases are perfectly capable of adapting themselves to new conditions, making it necessary to create still other and different disease-resistant varieties. Thus the plant breeder is well on his way toward the discovery of perpetual motion.

Impetus to his progress in that direction is also being given by an increasing demand for special types of fruits and vegetables. It's the fashionable vegetable that the housewife demands, says a recent article in the Washington (D.C.) Star, pointing out that growers must be as alert to ritzy styles in fruits and vegetables as the milliners or haberdashers are to changes in styles in their fields. Not only that, but fashions differ in various parts of the country, so that it becomes a job of increasing importance to cater to the broad field of tastes and demands in horticultural products.

It wouldn't seem possible that styles in carrots could change very much, for example, but Dr. Boswell points out that they have done so, and quite radically. "A few years ago," he is quoted as saying, "the consuming public wanted a carrot that was blunt and stubby in shape--and blunt and stubby carrots they got. All of a sudden the blunt and stubby carrots were as out of date as a three-year-old straw hat. Slim, tapered, aristocratic looking carrots held the fashion spotlight--and do today.

"The producer of foodstuffs must keep up with fashions just as the milliner does. If he doesn't, he finds a slackened demand for his wares. In other words, if the public decides it wants slim carrots and doesn't get

slim carrots, some other vegetable steps in, just as another milliner steps in and gets the business when a popular designer forgets for a minute or two that the public wants what it wants when it wants it. If it can't get it at one place, it goes immediately to another where the desired article may be found."

Keen competition among growers and the growing discrimination of consumer in the matter of food products both tend toward the development of superior varieties. Thus we find that many of the older varieties of fruits and vegetables, once considered very satisfactory, are now hopelessly out of date and sell for low prices.

Too, there is a growing trend toward the development of varieties to meet special needs. We are experimenting with potatoes, for example, to find varieties specially suited for those ever-popular adjuncts of American meals--potato salad and potato chips. We know today--folks did not know it years ago--that certain dishes demand a potato of a special type to produce the best results. What we are trying to do is to produce potatoes to meet that demand. And we are working along the same line with many other fruits and vegetables needed to meet new conditions or uses.

Dr. Boswell also makes the interesting point that not only do the fashions in fruits and vegetables change from year to year, but they may vary considerably in different parts of the country. Thus we may find that in one section turnip tops are eaten and the roots ignored, while in other regions the roots are selected for food and the tops often tossed aside. Sometimes the same situation prevails with respect to beets. In many places in the United States the roots only are used, but in others beet greens are in equal demand by consumers.

The fact that in one section turnip roots are desired and in another the greens, naturally complicates the work of the plant breeder. In the first instance he must work for plants producing larger roots; in the second what is desired is plants producing an abundance of greens, with definitely less emphasis on the size of the roots.

A relatively new development in dietary habits, the extensive use of tomato juice, has given rise to the need for new ventures in tomato breeding. When practically every restaurant and food shop in the country features tomato juice, and it is served daily in thousands of homes, there arises at once the need for new tomatoes giving a full, rich volume of juice. Well, we are supplying them!

Peas have been cultivated since the Stone Age, but distinctively American requirements in pea crops keep our plant breeders on the alert. Just now, for example, they face three demands: Fresh market peas, canning peas, and peas for freezing purposes.

HANDLING, TRANSPORTATION AND STORAGE, AND MARKET DISEASE INVESTIGATIONS

A famous old recipe for cooking carp says you should place the carp on a smooth plank, cover with butter, season with salt, pepper, and a little paprika, bake in a hot oven for half an hour--and then throw away the carp and eat the plank. Certain--er--carping critics have taken a similar position with regard to the Kieffer pear, but our colleague J. M. Lutz has shown them a thing or two about handling the Kieffer, and is now tackling the sand pear.

You will recall that Lutz succeeded in producing canned Kieffer pears that did not need take a back seat for Bartletts. He selected three of the best commercial grades of Bartletts from retail stores and each of nine judges graded all of the various lots of Kieffers he had ripened at 60°F. (except one lot held at 32° for too long a period) as distinctly superior in flavor to the Bartletts and either equal to or nearly equal to Bartletts in texture! When he went to the Meridian, Miss. station about a year ago, he found that some of the folks already knew of the work he, Culpepper and Moon had been doing with the Kieffer. One citizen, however, insisted that if J. M. really wanted to do something worthwhile he should tell them how to make the sand or Pineapple pear soft enough to be edible.

"Sand pear" is a general term applied to the coarse grained, gritty Oriental type of fruit; "Pineapple" is a horticultural variety name of one particular Oriental pear. The pears are characterized by extremely poor quality of fruit, but the trees are extremely vigorous and quite resistant to blight. A good many of the trees throughout the South produce excellent crops even without pruning, spraying, cultivation or other care. They are very easily propagated by cuttings.

"While near the Gulf of Mexico recently," writes J. M., "a man showed me several trees, bearing 5 to 10 bushels each, which he claimed to be two years old. Since he had lived in California at one time, I assumed that the trees were probably 5 to 6 years old, but it does illustrate the ease with which they can be grown. The chief difficulty with this sand or Pineapple pear is the poor quality of the fruit. Our friend Dr. Caldwell (CID) used to describe the Kieffer as making a pretty good grade of woodpecker food. They have no trouble with woodpeckers attacking the sand pear. A woodpecker seems to be a wise bird.

"When I showed the aforementioned Mississippi citizen a method whereby the sand pear could be softened to an extent to be edible, he was mildly surprised and then walked out of the building and came back with a piece of 2x4 pine timber and asked me to see what I could do with that. When last seen the gentleman was just two jumps ahead of the piece of 2x4."

This just goes to show how the boys in the section of handling, transportation and storage and market disease investigations are building up a reputation for efficiency. Just now, I understand, J. M. is working on a method for softening mullet bones!

DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"Fruit clusters resulting from this year's controlled grape crosses have been harvested at both the Oakville and Fresno Vineyard plots," he reports October 9th. "A setting of fruit was obtained in 57 different crosses. An increased percentage of setting was noted at the Oakville plot over the set obtained at the Fresno plot although the same varieties were not involved in the crosses. At Oakville, 21 crosses involving 1,820 emasculations produced 956 berries which in turn produced 1,551 filled seeds (hollow seeds are floated off in the cleaning process). At Fresno, 36 crosses of 6,532 emasculations produced 1,501 berries and 1,848 good filled seeds. Thus, at Oakville 100 emasculations produced 85 well filled seeds, while at Fresno 100 emasculations and pollinations produced only 28 seeds.

"As various variable factors were involved in the above emasculations, pollinations, and varieties crossed, we have no satisfactory answer for the apparent better setting of crosses at Oakville this season. It would, however, simplify our breeding work if we could be assured of obtaining 85 good seeds from each 100 emasculations, as was obtained at Oakville this season."

He wrote October 5th: "An open field day was held at Oakville under the auspices of the Napa County Farm Advisor. In addition to local growers and nurserymen, the following interested representatives visited the vineyard: Dr. M. W. Gardner and Dr. C. E. Scott of Plant Pathology at Berkeley; Dr. Olmo and Dr. Winkler, and students from Davis; Mr. R. N. Wilson, State director of agriculture of the State Chamber of Commerce, Mr. W. D. Butler, Napa County agricultural commissioner, and Mr. Harper, former extension specialist from Georgia. A display of typical clusters of more than 150 varieties was made, which included table, white wine, red wine, eastern American, and direct-producing varieties. Growing shoots of the more important stock varieties were shown for their educational value. A tour of the vineyard plantings was made to indicate the nature and extent of the grape work at the Oakville plot. Since the vineyard plot is locked up the major part of the time, this effort on our part to be of service to growers and interested parties in that section seemed to be greatly appreciated.

"The first rain of the season in that section occurred on October 2, but not of sufficient quantity to injure the grape crop. Harvesting operations were quite far along. Eastern shipments were being made of red wine grapes while local wineries were crushing both white and red wine varieties. One grower reported harvesting 10 tons of Concords per acre but we think this tonnage is slightly exaggerated. San Francisco and Oakland furnish a good local demand for eastern type grapes and some varieties can be grown to good advantage in the Napa valley especially if grafted on resistant rootstocks."

DECIDUOUS FRUIT INVESTIGATIONS

John C. Dunegan, Fayetteville, Ark.

"I have received specimens of Tranzschelia pruni spinosae discolor from Dr. C. E. Owens of the Oregon Agricultural Experiment Station during the past two years," he writes October 16th. "The rust was on Prunus domestica and while the teliospores had the morphological characters of the variety discolor, they were produced so profusely that I wondered if the rust in Oregon was a distinct race. Inoculation experiments with the Oregon material gave negative results in 1936, but during the past week urediospores have developed on peach leaves inoculated with the 1937 collection from Oregon. These results indicate that the rust on Prunus domestica in Oregon is merely the discolor variety and not a distinct race.

"In the course of the field work at Ruppel Bros., it was noted that the sclerotial stage of Claviceps paspali was unusually abundant on Paspalum dilatatum throughout the orchard. Specimens were collected and shown to the Ruppels. As the result of this information they immediately decided not to allow their stock to range in the orchard after the apple crop is harvested for fear of forage poisoning due to this fungus."

He had written October 9th: "The outstanding news item of the week is the perfecting of a plan whereby the Surplus Commodities Corporation is to purchase apples from Northwest Arkansas to relieve the market situation. For the period October 4-9 the Corporation agreed to purchase 67 cars, this total to be distributed among the counties as follows: Benton 34, Washington 23; Carroll 4; Boone 4; and Madison 2. Varieties to be purchased included Grimes Golden, Winesap and all early varieties, to be 2-1/4 inches or larger, Stayman Winesap, Red Delicious and Golden Delicious. These last three varieties were to be 2-1/2 inches or larger. The apples must be within the spray residue tolerance and be Government inspected. The initial price set was 60 cents a bushel ring faced with top and pad, or 60 cents per hundred for apples in bulk, prices f.o.b. in the car. The entrance of the Surplus Commodities Corporation into the apple market has brought about an increase in price for the fruit and the growers have not found it necessary to use their entire allotment for this initial period.

"Another factor in increasing the demand for apples has been an 'Apple Week' campaign organized and advertised for the week of October 10-16. An effort is being made to get people throughout the State to use Arkansas apples. Several of the chain stores have featured full-page advertisements, there will be displays of apples in Little Rock--and it is reported that the school children will be allowed to eat apples in the classroom during the week! It is too soon to definitely evaluate these schemes to promote the consumption of Arkansas apples, but with the price rising the plans are starting off with considerable promise."

DECIDUOUS FRUIT INVESTIGATIONS

G. A. Meckstroth, Willard, N. C.

"I spent several days last week with Dr. Darrow and Dr. Christie examining the strawberry sections at the Station and a number of fields in this section for the dwarf disease," he writes from the Coastal Plain Station on October 16th. "The dwarf nematode was found in a number of selections. It was rather surprising to find the nematodes in some of the plants that to us only appeared suspicious and did not show definite symptoms of the disease. As a rule the nematodes are seldom found in plants unless the symptoms are rather definite and typical.

"The yellows-free Blakemores from Albany, Ga. that were set out at the station last spring still remain free of yellows. I noticed a slight yellowing sometime ago but this is not typical yellows but a chlorotic condition due to some soil deficiency--probably manganese. We had an opportunity last week to observe the yellows-free Blakemore plants that Albritton Brothers at Mount Olive, N. C. set out in the spring of 1936. To date they have remained free of yellows. We also examined the yellows-free Blakemore plants from Arkansas set out in the spring of 1936 and also a 2-acre field set out in the spring of 1937 with plants from these rows. In this 2-acre field we found only 6 yellow plants. About 14,000 plants were set out, so this means that the field is almost free of yellows. The yellow plants were taken out of the field. We had another opportunity, too, of examining yellows-free Blakemores from Albany, Ga. on the farm of M. R. Horrell, Atkinson, N. C. He set out 1 row last spring and there is now no evidence of yellows or dwarf in this row....We also visited the blueberry plantings of Mr. Crabbe at Magnolia and Mr. Huntington at Atkinson. On the farm of Mr. Huntington there are now growing about 5,500 seedlings from crosses that had been made in New Jersey by Dr. Coville.

"This week I have been continuing my work on grape diseases. In going over Block 4, consisting of hybrids, I was struck by the apparent absence of spots of Guigardia bidwellii on the leaves of one of the selections--No. 34. I took two suspicious appearing leaves to the laboratory, but when examined under the microscope instead of finding the black rot fungus, I found only spores of the bitter rot fungus, Melanconium fuligineum. The black rot fungus is common on Muscadine foliage and in order to check this further I again examined the vine carefully for evidence of the fungus. I found only 2 leaves with 1 spot each. These proved to be Guignardia bidwellii. The freedom from black rot leaf spots on this vine is very striking, but I do not know whether it is a case of escaping infection or whether it possesses real resistance. It is a white grape, very sweet and of good quality. Another striking thing about the vines which show distinctly hybrid character is the small number of spots of Guignardia bidwellii. Some of these vines show no spots whatever except those caused by Isariopsis. I have examined a number of these hybrid vines and am unable to find any evidence of the black rot fungus on the leaves, while some have a very slight infection. Most of these hybrid vines are almost free of Cercospora infection, which is very common on practically all the Muscadine vines."

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, East Wareham, Mass.

"Considerable time this week has been devoted to the analysis of arsenical residues on cranberries," he writes from the Cranberry Disease Field Laboratory on October 14th. "This is something that previously has been of no interest to cranberry growers. A new insect pest that eats the cranberry leaves and which in severe infestations causes much damage, has been operating this summer. The insect appears late in the season apparently becoming most abundant during the middle or latter part of August.

"The most effective method of control so far known is to spray with lead arsenate, which leaves an abundant residue of arsenate on the fruit. So far as I know only one bog was sprayed with lead arsenate this year, but it may be necessary to do more of it another year. On this one bog several acres were sprayed so that there are about 700 barrels of berries from which the arsenical residue will have to be removed. An attempt to remove the residue by running the berries between plush-covered rollers and over a plush belt where they were rubbed with plush mittens failed to take off enough residue to bring it below the permitted tolerance. There was still 2-3 times as much arsenic as is permitted after they had been milled in that way. Samples have been taken at intervals from September 12, and after once and twice milled as above stated, so that when the analyses are completed we will have a record of the initial amount of arsenic present and the amount left after any given treatment."

FUNGUS CULTURES FROM ABROAD

"It has recently come to my attention that some of the Bureau personnel have written individually to foreign countries requesting fungus cultures for use in connection with their research," says Mr. F. D. Richey in a Memorandum to Heads of Divisions, dated October 21, 1937. "Some of these cultures were organisms pathogenic to cultivated crops and which are not known to occur in the United States. Others may have been innocuous.

"In view of the dangers arising from bringing in cultures of pathogenic organisms, it seems highly undesirable to have members of this Bureau handle such requests individually. In the future, therefore, all such requests should be routed through the division head to the Office of the Chief of Bureau for final approval before going forward. Final forwarding will be through the Division of Plant Exploration and Introduction, which will undertake to obtain proper sanction from the Bureau of Entomology and Plant Quarantine in advance so that the shipments will move promptly without danger of seizure when they finally enter this country."

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

Writing on October 9th he says: "The new A. G. A. cold storage plant was dedicated October 2, and already has some 200,000 boxes of pears in the storage rooms. Of particular interest to me in a trip through the building was the conveying system. Endless belts are arranged with suitable switching corners so that the fruit delivered at the receiving platform can be routed to any room in the plant from a single point. The whole system is reversible. Precooling as well as storage space is included.

"A visit to the Mt. Adams orchard with Mr. Smith and Mr. Ryall was very interesting. The crop from this non-irrigated orchard was estimated to be around 115,000 boxes of pears. From 30 to 35 boxes per tree was not uncommon, and sizes were large considering the growing conditions. Some of the fruit showed a peculiar bronzy-yellow color that is probably due to these growing conditions. They were particularly concerned with fruit showing a velvet-fine russet which is causing considerable culling. It seems quite possible that this injury is due to the rust mite primarily, with moisture being an aggravating factor.

"September 9 started most of the Bosc picking in the lower valley. Anjous started September 13th. Only about a week separated the lower and upper valleys as to picking dates. It was interesting to note the rapid decrease in pressure tests of the Anjou pear during a warm spell in the upper valley, from around 19-16. Growers were about to pick the fruit but when tests were again made it was surprising to find the pressures running round 21. This phenomenon apparently is not unusual especially at higher elevations, according to Mr. Smith. The Bartlett and Bosc fruit dropped rapidly after proper picking time but Anjous did not. Newtown apples were being picked before Delicious and in many cases along with Anjous. I believe as a general rule Newtown picking started at least two weeks too early this year."

NUT INVESTIGATIONS

Howard E. Parson, Shreveport, La. (Pecan Disease Laboratory)

"The entire week beginning September 20th was devoted to taking notes on the control of vein spot, downy spot and liver spot in the Webb orchard. A more satisfactory method of evaluating the damage done by vein spot was devised. Not all of the notes have been taken so far, but some points of interest already appear. Some unsprayed trees have over 70 percent of the leaflets either killed or in danger of being killed by vein spot. They have more than 11 downy spot sand 1 liver spot per leaflet, not to mention leaf scorch or insect injury. Two applications of bordeaux spray late in the season have had little effect in controlling leaf spots; however there appears to be stimulation of the foliage from the spray. There is a marked reduction in leaf spots from 1 prepollination application and 1 early summer application of spray. There is more downy spot on trees sprayed with bordeaux mixture made with low proportions of high magnesium hydrated lime than desirable, but nearly 50 percent less vein spot than on unsprayed trees and very little liver spot."

NUT INVESTIGATIONS

F. N. Dodge, Robson, La. (Pecan Field Station)

"Harvest will begin Monday with Moore the first variety to be harvested," he reported October 11th. "The Moores are well open, which should make it possible to harvest them clean at this time. Western Schley is about as far advanced as is Moore, and Eastern Schley should be open sufficiently by the middle of the week to enable us to harvest them almost completely. Stuart and Success as well as many other varieties are beginning to open so that it looks like our harvest period will be much earlier this year than it has been the last two years."

C. E. Schuster, Corvallis, Oreg.

"The filbert harvest is now on," he writes October 2. "It is interesting to note this year particularly that in those orchards where an abundant water supply is available, especially by irrigation, the crop is considerably later than in adjoining orchards without irrigation. On the soils in which the trees normally dry out early, the nuts are dropping considerably ahead of those trees on heavy, better watered soils....The filbert crop looks big. The price has been dropped two to three cents. The entomologists are reporting quite a few more worms in filberts than last year, and new places are reporting infestations....Walnuts are just beginning to drop. The heavy rains the last few days will increase this dropping considerably. The walnut crop will probably be a fair to average one, as the loss from blight is mounting."

J. R. Cole, Albany, Ga.

Writing from the U. S. Pecan Disease Field Laboratory on October 9, he says: "We are patrolling our experimental plots with a shotgun, protecting the nuts that are almost ready for harvest. Crows, bluejays, squirrels and occasionally people, gather these nuts before we are ready to harvest in a good many cases, and when we have obtained such outstanding results as we have this year we are very careful to prevent our records from being interfered with.

"Since we held our Pecan Field Day and Tour we have had quite a few visitors to look over our plots. These growers are taking more interest in our work here than for a great many years. Growers in the vicinity of Albany that a few years ago ignored the research workers completely are continuously coming out to the laboratory, visiting our plots, and seeking our advice at frequent intervals. This is also the season of the year when absentee owners visit their orchards here from such distant States as Illinois, Michigan and New York....Temperatures have been unseasonably high throughout the week without any rain on this vicinity. Some of the cover crops that have been planted, consisting of Hairy vetch, rye, and Austrian peas, are up and a good rain would be quite beneficial to them."

U. S. HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"All potatoes from experimental plots have now been harvested and sorted and all field work with regard to potatoes has been completed for this season," writes Bob Howell for Superintendent A. C. Hildreth. (Yes, Bob has been sent out from the Washington, D.C. office to handle clerical details at Cheyenne, with Walter Roney dodging the procupines and reporting for duty at Washington, D.C.)

"About 60 varieties of trees were planted in boxes during the week ending October 16th. The first group will be ready for removal in about a year."

Writing on October 9th, Bob reported that Jim Kraus found that a large percentage of the potatoes harvested early in October already showed rot spots of considerable proportions. Jim estimated that about 10 percent of the potatoes were affected. He wasn't certain about the cause, but believed it might be bacterial wilt, which appeared in Colorado fields this summer for the first time, having been found only further south previously."

ADMINISTRATIVE NOTE

Inventory As the monkey said when his tail got caught in the lawnmower: "It won't be long now!" So this is just a reminder that the annual property inventory lists will soon be made up and sent to field stations for checking.

It is desirable that all items of equipment that are no longer serviceable be removed from the inventory records before these annual lists are made up. In most cases Boards of Survey have already been appointed to dispose of unserviceable equipment at the various stations of the Division. Action on such property should be taken now and the report sent in to Washington, D. C. promptly so that the items will not appear on the lists sent out later for checking.

In case there is no Board of Survey at your station, you should write Mr. Gillette asking for the appointment of such a Board as promptly as possible.

FLORIDA ORANGE CROP

The Crop Reporting Board placed Florida's orange crop recently at 24,000,000 boxes, the largest ever recorded. This forecast exceeds last year's record crop by 1,500,000 boxes. The total California production was not included in the predictions, but last year's crop was 30,063,000 boxes. The board predicted the season's grapefruit production in all States would be 25,455,000 boxes, second only to last year's record crop of 30,281,000.

--Daily Digest, USDA.

ADMINISTRATIVE NOTES

Marking the Automobile. There had been an automobile accident. One of the drivers climbed out of his car in a fit of temper and strode up to a man on the sidewalk, thinking him to be the driver of the other car. "Why in blazes aren't your tail lights lit?" he demanded. The other man looked at him calmly. "What do you think I am," he asked; "a lightning bug?"

What we mean is that we don't want any misunderstandings about the ownership of official cars. The Regulations (Par. 1834) provide that all motor-propelled vehicles of the Department except motor cycles and railroad speeders, must at all times be marked on both sides to show that they are the property of the U. S. Department of Agriculture. The same regulations also provide that "All such markings shall be removed before vehicles are sold, traded in, or turned over to other organizations outside of the Department."

The Department's Division of Operations asks us to impress upon you the importance of seeing that such markings are put on--or taken off--as the situation demands.

Misassignment of Employees. We were congratulating one of our veteran associates on the "horse sense" displayed in handling a rather difficult situation. "It's the result of my early training," he explained. "You know my first job at the field station was looking after the horses." "What has that got to do with it?" we wanted to know. "Why," he said, solemnly, "that, of course, is where I acquired my horse-scents." All of which reminded Roy Gillette of the boy, offered a similar job, who hesitated about accepting it. He didn't mind looking after the horses, it seems, but he refused to be listed as a hosteler. So the station superintendent had him appointed as an assistant in stable-ization activities.

That was a long time ago, but we are still having trouble over misassignments of workers. Chief of Bureau memorandum no. 953, dated September 28, 1937, calls attention to the strict necessity of assigning employees to duties within their examination status. The Civil Service Commission, it says, has found a considerable number of cases of misassignment in various Federal activities recently.

Our problem, of course, is primarily concerned with the proper use of unskilled labor, including farm laborers. An individual employed as an unskilled laborer or a farm laborer should be assigned to laborers' duties only. Necessarily we must rely upon those in charge of workers to see that the Civil Service requirements are fully respected.

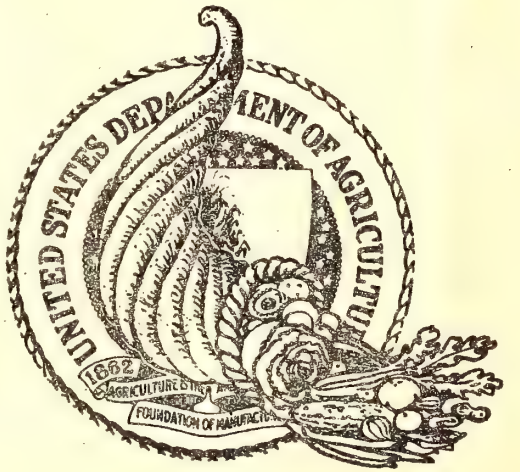
Is your face red?

Vol. 9 No. 21 November 1, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R.

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., November 15, 1937 No. 22

Ornamental--and Useful! In addition to its general activities in connection with the growing and handling of fruit and vegetable crops, the Division devotes a good bit of attention to floricultural and ornamental horticultural investigations. If you do not realize that this is an extremely practical field of work and not a mere artistic relaxation, ponder the fact that American agriculture has nearly three hundred millions of dollars invested in such activities, with an annual return of one hundred and thirty-one million dollars! These figures cover farms and nurseries engaged in growing flowers and ornamental plants, outdoors or under glass. There are also thousands of farms engaged in the growing of bulbs on a commercial basis, and others that produce seed of flowering plants for sale. This latter is now a well developed industry on the Pacific Coast, especially in California.

These thoughts are aroused by the Thirty-Sixth Annual Chrysanthemum Show staged at the Department's greenhouses in Washington, D.C. More than two thousand plants of some five hundred varieties were displayed, and of these five hundred varieties more than four hundred were originated in the Department's greenhouses here. We, of course, have been actively engaged in chrysanthemum breeding work for many years, first at Arlington Farm and now with headquarters at the U. S. Horticultural Field Station, Beltsville, Md. From Beltsville we send our new varieties to the various State experiment stations for testing.

Chrysanthemums have already been developed in connection with this work that will bloom as early as July in the vicinity of Washington, D.C., and there are other strains that follow in succession until heavy frost. The work has shown, too, that the time of bloom is a heredity trait, transmitted from parents to seedlings.

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

N. H. Loomis (Small Fruit Investigations)

"During the past week a check was made of the vineyards to determine the number of vines that had died during the past year," he writes October 23. "Two of the varieties in the rootstock vineyard, Manito and Goethe, showed a considerable number of dead vines even though they had made a heavy growth earlier in the season. These vines defoliated early. The Goethe has been unsatisfactory in yields, growth and resistance to disease....It is outstanding that three of the ten rootstocks under trial are short lived, which is in agreement with similar trials conducted at Poplarville, Miss. These varieties are Rupestris x cordifolia 107-11, Monticola x riparia No. 18815, and Constantia."

"A study of the grape yield records for the past year shows that in some of the best plots yields of marketable fruit the equivalent of 3 tons to the acre were obtained on Delaware and Catawba, and 2-3/4 tons on Manito and Ellen Scott. The Manito and Delaware were fully ripe during the last week in July, the Ellen Scott by the 20th of August, and Catawba the last week in August. These yields of excellent quality grapes, together with their early ripening, make their production in this region entirely practical. These yields were all obtained on vigorous rootstocks and are more than twice as great as those obtained from the own rooted plots except in the Catawba. The best plots of Carman and 'Florida Beacon' grapes yielded the equivalent of 3 and 3-1/4 tons of marketable fruit per acre. Here again maximum yields were obtained on vigorous rootstocks and these were 1 ton greater per acre than the best yields from the own rooted plots of these varieties. Commercial plantings in this region are generally on their own roots....Yields equivalent to 6 tons per acre were obtained from Lenoir, an excellent purple juice grape, and on its own roots the best plot produced an equivalent of 5-1/2 tons per acre."

George P. Hoffman (Vegetable Crop Investigations)

"Cut back spring transplanted and midsummer fruited tomato plants forced new tops on 34 percent of the old stumps and developed a fair yield as a second crop of medium to small sized fruits. This planting was of the Gulf State Market variety, plants set deep, trained to a single stem, fruited until early July and cut back to the first strong bud above the ground--6-10-inch stumps. Immediately after the 'spent plants' had been cut back, a thorough and shallow cultivation was given, followed by an application of 150 pounds of nitrate of soda per acre. The results obtained in this preliminary study suggest the value and practicable use of this method as a measure of partially overcoming a seasonable shortage of plants, adverse weather and a limited growing season, in the production of second crop tomatoes.....It is interesting to observe the increased interest in tomato growing for commercial canning about Columbus, Miss. From favorable comments, reports, and the several 'tomato minded' visitors to our station, one might rightly infer that our tomato investigational work here, at Crystal Springs, and at State College is reflecting itself in the minds of growers."

NUT INVESTIGATIONS

F. N. Dodge, U.S. Pecan Field Station, Robson, La.

"We harvested and sized the Success on 6 plots in the Cultural Block," he writes October 25th. "Yield records from those plots indicate that our previous statements that there will be big differences in yields and size of nuts between the cultivated and the sod plots is true. Thirty percent of the nuts from the Lespedeza plot were greater than 1 inch in diameter, while 86 percent of those from the adjoining summer cultivated plot were of the same size. Similarly, 10 percent of the nuts from the Lespedeza plot were less than 14/16ths of an inch in diameter, while none of the nuts from the cultivated plot were less than this diameter. Some of the nuts harvested from the trees in the Lespedeza plot were less than 12/16ths of an inch in diameter. This is exceptionally small for Success.

"The Success on one Bermuda plot have been harvested with similar results, except that the reduction in size of nuts was not quite as great as it was in the Lespedeza plot. One rye plot and one plot in which the winter legume was turned under late have been harvested with nuts intermediate in size between the Bermuda plot and the summer cultivated plot. Those plots that produced the largest nuts also had the largest average yields per tree. The decrease in yield on the Bermuda and Lespedeza plots seems to have been greater than can be accounted for on the basis of reduction in size of nut. The Success trees harvested to date have yielded very well with yields up to 22.6 pounds of nuts per tree. It is apparent that we will have a good crop of large well filled nuts on the station this year."

He had written October 18th: "This week the work on the station has been devoted almost entirely to harvesting and sizing this year's pecan crop. We have harvested 933 pounds of Moore with an average of 18 pounds per tree. Three hundred and sixty pounds of Western Schley have been harvested this week, with an average of 30 pounds per tree. The 6 Moore trees in the Variety Orchard had an average of 28.5 pounds of nuts per tree, so that they were not much behind the Western Schley. The heaviest yielding trees are 1 Western Schley tree with 65.5 pounds and 1 Moore with 51.2. Eleven Moore trees out of a total of 56 harvested yielded more than 25 pounds, and 7 Western Schley trees out of a total of 12 had a crop larger than 25 pounds.

"Mr. Parson and I took notes on disease infection in the Variety Orchard this week and found that downy spot has been practically eliminated this year, and that there are only traces of vein spot and liver spot. Our spray program apparently has been very effective in controlling foliage diseases in this orchard. Several western varieties are showing more scab than in previous years. Western Schley has a heavy infection of scab, but it is hardly bad enough to interfere with nut filling. It looks like this variety is worth working on further since for three years it has been one of our best producers, and scab does not seem to be so bad that it could not be controlled with 4 or 5 bordeaux sprays."

NUT INVESTIGATIONS

A. H. Finch, Tucson, Ariz.

"Pecan growers in the Yuma valley are getting ready for harvest," he reported October 9th.

"The majority are undertaking the use of ethylene gas to assist in their harvesting operations. They will mostly use canvas to cover the nuts during the experiment. Because of the new methods that are being tried there is considerable confusion but it appears that the nuts will be harvested earlier this year and will be of better quality and have less pre-harvest germination than formerly. The filling of the nuts is uniformly good except in a few orchards where it was necessary to irrigate late on account of Texas root rot. The Burkett trees in these orchards have become an intense green and filling of the nuts seems to have ceased."

J. R. Cole, Albany, Ga.

Writing from the U. S. Pecan Disease Field Laboratory on October 23, he says: "Growers do not hesitate to purchase zinc sulphate upon our recommendations because this material does bring the trees out of rosette and at such a comparatively small expense. Growers are also continuing to come to our laboratory here. They are interested in seeing our experiments in the nearby orchards as well as in conferring with us as to the future plans for handling their orchards."

Howard E. Parson, Shreveport, La.

"Differences between sprayed and unsprayed pecan trees are showing up more strikingly as the season advances," he reports October 23d.

"On the larger trees in the Fullilove orchard it hasn't been possible to apply the spray well enough over the tops with the machinery we have. The foliage is nearly gone in the uppermost parts of the trees, but is good on the lower parts. This indicates the type of machinery required for adequately spraying our large pecan trees. One grower with whom work is being conducted is indicating that he is becoming convinced from the past two years' work that he will have to invest in spraying equipment."

Paul W. Miller, Corvallis, Oregon

"The walnut harvest is scheduled to get under way in earnest this coming week. A heavy rain which occurred on Friday and Saturday, October 10 and 11, brought down a large percentage of the nuts."

NUT INVESTIGATIONS

B. G. Sitton, Shreveport, La.

"In the cultural plots in the Fullilove orchard the difference between trees sprayed with bordeaux mixture for foliage diseases and those that had no spray is quite marked," he writes from the U.S. Pecan Field Station on October 25th. "The unsprayed trees have lost approximately 75 percent of their foliage at this time while the sprayed trees have lost but 25 percent and most of this loss is from the top of the trees that did not receive sufficient spray to be completely effective. The color of the foliage on the sprayed trees is still healthy green, whereas that on the unsprayed trees has a brownish cast and some of the trees are putting out new foliage.

"Close to this orchard is another owned by Mr. W. J. Fullilove that has received clean cultivation, both summer and winter, for the past several years but has had no spray at all. This orchard has foliage that compares very favorably with the trees that were sprayed, possibly due to the effectiveness of the cultivation and the destruction of the old leaves, reducing the amount of spores produced by infection of the leaves by the various foliage diseases."

Max B. Hardy, Albany, Ga.

Writing from the U. S. Pecan Field Station and Laboratory on October 23d he says: "Harvesting of nuts in all orchards was delayed during the week by unseasonably heavy rains. October is usually one of the driest months of the year in this section of the country, but during the week a total of almost 4 inches of rainfall was recorded at Philema. In 1935 the total monthly rainfall for October was .08 inches and in 1933 it was .10 inches. As a result of the heavy rains coming immediately after the completion of the sowing of the Hairy vetch seed, we are expecting a good stand of the cover crop and at the present time the sprouting of the seed appears to be excellent."

He had written October 16th: "Pecans are maturing very rapidly. The crop prospects are still uncertain with the September crop report for Georgia showing a decrease from that of 1936 while the local distributing agencies are looking for an increase over 1936. Opinions as to prices are very pessimistic in view of the bumper crops of almonds, walnuts and filberts and the relatively small size of the pecans this year. Partly because of the small size and partly because weather conditions during the period of filling were favorable, most varieties will be well filled this year....More than usual leaf scorch and early defoliation of sprayed trees has been noted this year and on unsprayed trees most of the leaves have now fallen due to the usual diseases and some black aphid injury. Following such defoliation, crop prospects for next year cannot be looked on with much optimism."

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

James S. Wiant, New York, N. Y.

"We are continuing to get a variety of problems on California tomatoes," he writes from the New York Market Pathology Laboratory. "I doubt if there is any vegetable commodity on which so many unanswered questions arise. According to Dr. Ramsey the California pathologists now believe that streak is of little importance but that spotted wilt is on the increase. That fits in with our latest observations. The tomatoes arrive with various discolored loops and circles. Sometimes these are configurations due to variation in coloring. In a few cases they are definitely necrotic and slightly sunken. Green tomatoes may show circular depressions that later become definite spotted wilt symptoms as the tomatoes ripen. In other cases healthy-appearing tomatoes show serious spotted wilt symptoms by the time they have ripened. This leads up to the question of the degree to which changes occur during transit. So far as I know we have no comprehensive data on this.

"Pleospora rot is very serious in many cars. The inspectors and commercial men are able to recognize the very early symptoms which show up as tiny brown spots at the periphery of the stem scar. The rate of increase per fruit and in number of fruits affected is extremely high during the ripening period. While I have not been in correspondence with Dr. Ramsey recently regarding this disease, it is my understanding that infection must occur at or soon after the time of picking. In conversation with Dr. Gardner several years ago he told me that they did not know the disease from the field viewpoint. Possibly fungicidal washes during the packing operations would reduce the losses from this disease. We should know more about the increase during transit.

"A third type of trouble is that of mechanical injury. The extent to which various blemishes arising from injuries of one sort or another change in color and in other ways become more apparent during transit has not been worked out."

ORLANDO OUTCROPPINGS

According to the story that has reached us, the specialist from Orlando returned recently from a tour of outlying districts in connection with studies on the ethylene treatment of oranges and reported further upon the vicissitudes and hazards of his work. On this trip he became so violently ill that he could not drive his car and had to call the local veterinarian who diagnosed the trouble as being due to partaking too freely of lobster, shrimp, oysters, clam chowder and other seafood selected from the menu instead of roast beef--complicated somewhat by the necessity of sampling liberally the Satsuma oranges which were being handled in the various packing houses. After this, J. R. says, he's going to stick to plain mullet, which he knows from experience will not clash with any kind of citrus fruit--whether direct from the coloring room and gas-filled, or fully aerated thereafter!

DECIDUOUS FRUIT INVESTIGATIONS

John H. Weinberger, Fort Valley, Ga.

Writing to Dr. Cullinan on October 25th he says: "On a rainy day the continuous growth records of the Early Hiley peach fruit were graphed on a single sheet. The graph showed that in the last half of its life, approximately, the fruit grew 25 percent more than the final size indicated, because that much shrinkage occurred between the daily periods of rapid growth. The influence of a rainy day or even a very light sprinkle of rain on growth was clearly noted. No periods of moisture deficiency occurred, so the effect of that factor on daily periodicity of growth could not be observed."

"The reports on accumulation of cold, which determine the probability of prolonged dormancy troubles with peach trees in south and central Georgia, are now initiated for this season," he reported October 18th. "During the past week 11 hours of temperature below 45°F. occurred at Fort Valley. Eleven hours are not very significant in comparison to the usual total for the season of more than a thousand hours, but nevertheless it is more than accumulated during a three weeks' period last January."

"After the experience of last winter in which not enough cold weather occurred to after-ripen peach seeds nurserymen had planted in the field the previous fall and the resulting lack of germination which followed, some nurserymen in this section are not taking a chance on another failure but are after-ripening the seeds before planting by placing them in cold storage during the winter. Information has been requested from this laboratory regarding temperatures, time and treatment in detail."

C. F. Kinman, Sacramento, Calif.

"Several days lately have been given to examining trees and making maps of cherry orchards to determine the growing and fruiting habits of trees and individual branches that produce poor crops," he writes October 6th. "Trees that have not been under observation for several years were again examined and those in a few other orchards were added. I hope to examine trees in additional orchards before the leaves are shed this fall. Arrangements have been made for top-grafting trees this winter to test the possibility of distributing characteristics of different tree or branch peculiarities by propagating material.

"Recently the orange colored sport branch of an Agen prune tree near Sutter City was examined and found to be performing the same as it did when visited last year and the year before. As in those years, all the fruit on one outside branch of a thrifty tree is orange in color, larger than on the remainder of the tree, the seed is smaller, and again this year the sport branch had a much heavier crop than any other branch on the tree. The crop was excessive. The fruit is sweet in flavor but seems to be lacking in acid. The sport is not recommended for commercial planting."

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"There were heavy frosts on the mornings of the 17th and 18th, making four severe frosts in succession; of these the first and third gave the lowest temperatures," he reports from the Cranberry and Blueberry Disease Laboratory on October 23d.

"The damage to cranberries resulting from the heavy frosts is much larger than we had thought possible a week ago. At that time we had believed that at least 90 percent of the New Jersey crop was safely harvested, and that the average damage would not exceed 10 percent of the fruit remaining on the bogs, which gave a maximum loss of 1,500 barrels. It was assumed that nearly all of the small growers had finished picking their crop. When returns came in, however, it was found that a large number of small growers still had berries on the vines and that where no water was available for flooding, nearly all of this fruit had been lost.

"Even where the usual frost reflow had been made by large growers, there was frequently some damage. The estimate of loss therefore was revised to a figure of 7,500 barrels, which is enough to make some difference in the total crop, and hit hardest where it could least be afforded. On some of the smaller properties, which had the first good crop in several years, as much as one-fourth of the total crop was frosted. The most severe damage was apparently done on the night of the 16th."

H. F. Bergman, East Wareham, Mass.

"In cranberries from one bog the amount of rot has increased greatly during the last two weeks since they were last examined," he writes October 23d. "In many instances the amount of rot was twice as great by the middle of October as it was at the end of September. On a number of plots on this bog from 20 to 25 percent of the berries were rotted on October 15.

"On one bog where red copper oxide was used in comparison with bordeaux, the cuprocide gave good control of rots, the best that we have had with any material not excepting bordeaux. The addition of wetting agents such as Areskap seems also to improve the control of rots by bordeaux. On plots on which bordeaux with 1/4 to 1/3 pound of Areskap was used with 50 gallons of spray there was less rot in the berries than when smaller amounts of Areskap were used or when soap was used.

Claron O. Hesse, Davis, Calif.

"We have gone through several of the apricot seedlings testing pits for bitter vs. sweet seeds; so far, only one cross, Royal x Grace, has given any sweet seeds. In this cross about 1/2 were sweet," he reports September 22.

DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

"The grape nursery at the Fresno Vineyard was taken out by tractors and nursery digger on October 19th," he writes October 30.

"This season the grape nursery was confined to the rooting of the more important varieties of rootstocks needed for experimental plantings, replacement of old plantings, and supplying material for cooperative tests. Incidental to the growing of the grape nursery, records were obtained on various factors related to the production of good, vigorous stock rootings. Data were obtained on the relationship of the source of cutting material, size of cuttings, spacing in nursery row, location, and placement of cut upon the resultant rooting produced. Weight records were obtained on the top growth as well as the increase in weight of the rootings obtained. Seventeen varieties or rootstocks were grown and the percentage of No. 1, No. 2 and No. 3 rootings obtained.

"Seedlings grown from stock variety seeds were selected for resistance to nematode infestation."

G. A. Meckstroth, Willard, N. C.

"I made a trip to Chadbourn recently and it appears that the strawberry acreage there will be much reduced in 1938," he writes October 30th from the Coastal Plain Station.

"On account of the increased acreage of tobacco and high prices paid in that section there has been a labor shortage and growers have been unable to get their strawberry fields cultivated and fertilized. Hoe hands demanded $1.25 to $1.50 per day, whereas a few years ago they could be secured for 50 to 75 cents a day. The result is that many fields have been plowed under or allowed to grow up to grass and weeds. Some growers are now working out their fields and applying fertilizers.

"The plants in the fields that have received normal care and fertilizer appear thrifty and foliage diseases do not appear to be serious. There is a slight amount of the scorch disease, Dipliocarpon cariana, scattered around the fields. This light infection is of special interest since this section experienced such a serious epidemic of this disease a year ago. The amount of leaf spot disease, Mycosphaerella fragariae, is very small.

"The first killing frost was recorded at the station on October 24, with a minimum temperature of 27°F. We have had only .28 inch of rainfall during the last two weeks, and the fields are getting very dry."

DECIDUOUS FRUIT INVESTIGATIONS

George F. Waldo, Corvallis, Oreg.

Writing on October 9th he sayd: "An interesting trip was made on Tuesday into the Cascade foothills east of Molalla, where there is a planting of strawberries, especially of Dorsett, which are grown for the Portland market.

"These strawberries are grown at an altitude of 2,300 feet, and the berries go on the market after the main Marshall crop is off. The Dorsett, being bright and of fine quality, sells at a premium over all other berries. The owner was very much pleased with the returns he has been receiving for the last five years.

One selection of our breeding work here, No. 450, was also very attractive for his trade, as it is a late berry coming on following Dorsett, also with good shipping and market qualities."

U. S. HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"Drs. Hildreth, Powers, and Benedict returned after working hours on October 16, bringing a large number and variety of seed collected from Indian pueblos in New Mexico and Arizona," reports Robert W. Howell, October 25th.

"The seed, all of which came from elevations equal to or higher than that of Cheyenne, included bean, squash, pepper and corn. Also gathered were a number of perennial flowering plants and trees and shrubs native to the southwest region. Seed gathered on the trip were cleaned and sorted during the week ending October 23d.

"Bean seed of the Dr. Tracy collection was cleaned during the errk. These were planted out again this year to insure reliable seed of the different varieties, about 165 in number. Babb and Kraus finished taking data on tuber counts and weights on the approximately 100 varieties of potatoes grown to test resistance to psyllid yellows or purple top disease.

"About 150,000 three-year-old trees (caragana, hackberry, and ash) were dug and stored in the root cellar after being sorted and graded. They will be distributed to cooperators and other experimenters next spring....

"Spuds from experimental potato plots were dug, yield being at rate of about 227 bushels per acre on plot that was sprayed. Largest potato weighed 1 lb. 15 oz."

ADMINISTRATIVE NOTES

Injuries to Employees — The disclosure of information pertaining to claims arising from injuries in which the United States has an interest is prohibited by an amendment to its regulations adopted by the U. S. Employees' Compensation Commission. Files, records, statements of witnesses, medical or other reports pertaining to claims arising from injuries in which the United States has an interest are considered to be confidential and must not be disclosed except with the approval of the Commission.

Under the amended regulations employees or custodians of records are prohibited from presenting such records of information in court, whether in answer to a subpoena duces tecum or otherwise. Whenever a State court subpoena is served, such employees will appear in court and respectfully decline to present the records or divulge the information called for, basing their refusal upon the regulations of the U. S. Employees' Compensation Commission.

"In all cases where a Government employee is requested to testify in regard to matters of an official or confidential character, knowledge of which has been acquired in his official capacity, he shall respectfully decline to answer," says the new regulation. "If his reasons are requested by the court or body conducting the hearing, he shall courteously state that the matter is privileged and cannot be disclosed without specific approval of the United States Employees' Compensation Commission...."

STATISTICAL METHODS

Statistical Methods Applied to Experiments in Agriculture and Biology. By George W. Snedecor, Director of the Statistical Laboratory of Iowa State College. 341 pp. Ames, Ia. Collegiate Press, Inc. 1937.

All users of statistical methods will welcome this very comprehensive and timely treatise by Dr. Snedecor. The line of treatment may best be given in the author's words:

"The biologist who has not been able to keep abreast of the progress of statistics finds himself a bit confused by the new ideas and technical terms. It is thought that he will welcome a statement of them in a form that will not require too much distraction of his attention from necessary professional duties....It is a fundamental belief of the author that statistical methods can be used competently by scientists not especially trained in mathematics. The conditions surrounding the mathematical theorems can be set forth in terms quite readily understood by the lay reader....None but the biologist can decide whether the conditions are fulfilled in his experiments and interpret the results. The only mathematics used in this book is arithmetic, supplemented by enough symbolism to make the exposition intelligible."

--H. R. Fulton

ADMINISTRATIVE NOTES

Oil The specialist who found himself marooned in the small town over night happened to notice that the village library was still open and he decided to try to borrow a book to pass away the time. "May I have 'The Letters of Charles Lamb?"' he inquired of the fair young clerk. She looked a trifle surprised. "You are in the wrong building, Mr. Lamb," she said. "The post office is just across the street--but I'm afraid it's closed now."

There has been a slight misunderstanding too, about oil under the Navy Department contracts--page 208, News Letter for September 1, 1937. The Procurement Division of the Treasury Department writes us that a correction should be made in the table. For symbol no. 2110 the S.A.E. number was given as 20W. It should be 10. Please correct your copy accordingly.

Destruction of Papers, etc. Paragraph 1534 of the Regulations provides that each year we must furnish the Secretary's office with a list of the papers, documents, etc. that have no permanent value or historical interest and should be destroyed. No papers are to be destroyed, of course, until definite approval is given.

If you have a quantity of such papers or documents on hand (not including the September 1, 1937 issue of the News Letter mentioned above) that you think should be destroyed, please send Mr. Gillette a list explaining just what things you have, and how many. Where practicable send him a sample showing the form, etc. you propose to discard. He will then advise you what to do about the matter--if anything.

Pay Roll Vouchers A few months ago we were requested to furnish pay rolls and vouchers, covering labor, in triplicate, in order that certain records could be assembled and furnished to the United States Civil Service Commission.

Many of our employees have interpreted this notice to include the regular monthly and semi-monthly pay roll certifications. These certifications for salaries, for which pay rolls are prepared in Washington, D. C., are not required to be furnished in triplicate. One copy only should be sent. Pay rolls prepared in the field should continue to be submitted in triplicate until further notice.

ADMINISTRATIVE NOTES

Inventory; Property, etc. The best way to avoid the dangers arising from biting dogs, of course, is not to bite dogs. And the best way to remember rules and regulations is to paste them in your hat or some similar place of easy access. We mention this because a lot of our field workers just can't remember how many copies of property forms should be made out and sent to Washington in connection with various criminal acts. This matter has so weighed on the mind of our inventory assistant, Wayne Guernsey, that he has worked out a table of values. According to him, the present rules require the following procedure and volume:

1. ANNUAL INVENTORY LIST. Two copies to be checked, signed and sent to the Business Office at Washington, D.C.

2. PROPERTY LOST, ETC. Two copies of all statements of property lost, damaged, etc. are to be filled out, giving condition at time of loss or damage, explaining what safeguards had been taken to prevent the loss or damage, and reporting as to the efforts made to recover the articles or secure payment for them. Both copies should be signed and sent to the Business Office.

3. REPORT OF BOARD OF SURVEY. Where sales are made, four copies of the report must be made out and signed. The original and one carbon copy, together with the proceeds of the sale, and the accounting office copy of the sales ticket, are to be sent direct to the Division of Accounts, Bureau of Plant Industry, U. S. Department of Agriculture, Washington, D.C.; one carbon to the Property Room, Bureau of Plant Industry; and one carbon copy to our Business office.
Where the report covers destruction of property only, and no sales, an original and one carbon copy should be made and signed, both being sent to our Business Office.

4. DESTRUCTION OF USDA LICENSE TAGS. Statement reporting on the destruction of U. S. Department of Agriculture license tags should be made out in duplicate on letterheads, both copies signed, and both mailed to the Business Office.

5. AUTOMOBILE, MICROSCOPE AND CAMERA QUESTIONNAIRES. When equipment of this type is ordered, questionnaires will be sent to you, to be filled in completely, signed, and mailed to the Business Office as soon as the equipment is received.

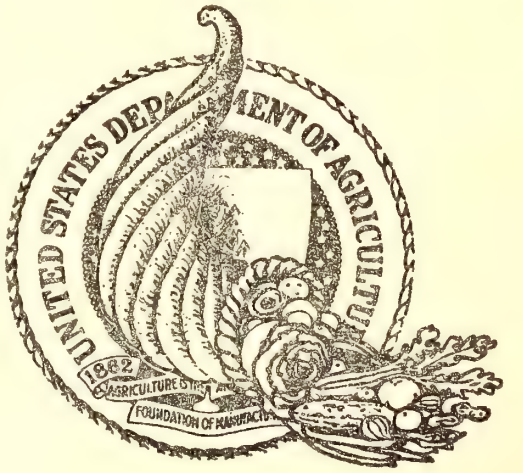
You can tack this up somewhere in the office for reference. In fact, some of our field men find it useful to have a sheet pasted up near the office desk showing how many copies of the various voucher and report forms are needed. By consulting this list, a good bit of trouble is avoided.

Vol. 9 No. 22 November 15, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The official organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., December 1, 1937 No. 23

Investments in Spraying

Reports from the field indicate that nut growers are getting excellent results from their investment in spraying. Dr. Paul W. Miller writes from Corvallis, Oreg., for example, that in spraying tests carried on in a 16-year-old grafted Franquette walnut orchard at Scholls, Oreg. a definite increase in crop yield followed the application of three properly timed bordeaux mixture sprays.

"The entire crop has now been harvested from the sprayed and untreated plots, and a significant difference in crop yield is apparent," he writes. "Thus, 798 pounds of nuts (field or wet weight) were harvested from 10 representative 16-year-old Franquette trees sprayed with three applications of bordeaux mixture 2-2-50, while only 328 pounds of nuts were harvested from 10 untreated trees that compare favorably in size and capacity. In other words, almost two and a half times as many nuts were obtained from the sprayed plot as from the untreated plot....

"I also made a trip to my field station near Aumsville, Oreg. where I made a study of the relation of spraying walnuts for the control of blight to the percentage of blighted culls in the crop. These studies give further evidence that spraying with bordeaux mixture results in a much cleaner crop of nuts, the percentage of culls due to blight stains on the shells and diseased parts of husks adhering to the nuts being sharply reduced. Thus, in tests carried on in that locality, three sprays of bordeaux mixture 2-1-50 reduced the incidence of blighted culls from 32.8 percent to 8.7 percent, or expressing it another way, there were over three and one half times as many culls due to blight stains on the shell and diseased parts of the husk adhering to the nuts in the crop from the untreated plot."

NUT INVESTIGATIONS

Further evidence of the profit from efficient spraying is supplied by J. R. Cole, who writes from the U. S. Pecan Disease Field Laboratory, Albany, Ga. that sprayed pecan trees averaged about ten times as many nuts as the untreated trees!

"We have begun harvesting our crop of nuts from the experimental plots," he writes October 30th, "completing those plots in the Palmyra orchard during the week. The tonnage was very light; however, this was to be expected since we had a good crop there last year. The trees that averaged 59 pounds last year, 20 trees per acre, will only average about 10 pounds this year. However, the check trees will only average about 1 pound, so the sprayed trees will be about ten to one better than the unsprayed check trees. Besides, the quality of the nuts from the check trees will be very inferior to those from the sprayed trees.

"Growers continue to visit our experimental plots in the vicinity of Albany. Messrs. F. L. Eberhardt and W. A. Bohanon (of Newark, N. J. and Lumber City, Ga.) spent Friday looking over our plots and were especially impressed with the thinned plots of Stuart and Alley varieties at Dewitt, and the Schley, Stuart and Alley varieties in the Taylor orchard. They were also favorably impressed with our spray program in the Taylor orchard and left with the idea of not cutting down and topworking all of their Schley trees, but of cutting out part and taking care of the remaining trees. Of course, the care would require a complete spray program for the control of scab disease."

He wrote further on November 6th: "The largest yield was 94 pounds from a Schley tree in the plot receiving the 3-1-50 bordeaux mixture spray preceded by the 2-1/2-50 bordeaux mixture prepollination spray. The second was 86 pounds in the plot receiving the 3-1-50 bordeaux mixture spray. The harvest from 8 check trees amounted to but 54 pounds, an average of about 7 pounds per tree of cull nuts that could be sold for about 5 cents a pound...."

A. H. Finch, Tucson, Ariz.

"Pecan harvest is now finished in Arizona," he writes under date of November 13th.

"The quality of filling was again improved over the previous year. There were no nuts that were below State minimum standards for filling. The majority were well filled. The improvement in filling has been accomplished chiefly through control of soil moisture. Earlier harvests and the use of ethylene to artificially loosen the shucks has been generally adopted. One grower who did not handle his harvest in this way lost his entire crop of Burketts through germination."

NUT INVESTIGATIONS

Milo N. Wood, Sacramento, Calif.

He writes November 13th that growers report that the nuts of hybrid almonds 8-31 and 8-32 are very plump and well filled and that buyers to whom they have been shown are anxious to get this type of almond. Without exception, all firms interviewed regard 8-32 as an outstanding nut from a marketing standpoint and state that great quantities could be sold. All of the firms were in agreement that 8-32 is superior to 8-31 from a marketing standpoint. Because of its outstanding qualities from a commercial standpoint, these firms are anxious to have 8-32 released as soon as possible. Both 8-31 and 8-32 produced very heavy crops this year. When compared with Ne Plus Ultra, which both resemble, the nuts are outstanding.

He had written October 30th: "A number of pecan orchards were observed at Yuma, Ariz. and in California. It appears that pecans are having a good deal of trouble. Part of this is due to soil conditions and to improper irrigation. Rosette was very bad in some California pecan orchards. Also some of the foliage indicated that pecans planted on alkali soils are suffering. Observations show that if pecans are to be planted at all in California they must not only be confined to very limited areas but careful attention must be paid to soil and water supplies as well as to climatic conditions.

"Quite a number of walnut orchards were examined. In some districts walnut dieback is much worse than I have ever seen it. Dieback was especially pronounced in some of the older orchards. The indications are that the dieback on walnut is becoming worse and may even be considered as a factor in reducing yields per acre. In the San Joaquin Valley the red spider has been very damaging to walnut trees. In some areas entire orchards show brown discolored leaves which were drying up, dying prematurely. It now seems evident that a spray program will have to be followed to prevent damage by mites."

C. E. Schuster, Corvallis, Oreg.

"The filbert harvest was completed by the end of October, and the walnut harvest almost finished. Heavy rains just when the walnuts were ready to drop brought down 80 to 90 percent of the crop inside of 4 or 5 days. Many growers, with light shaking, picked 80 to 90 percent of their crop the first time over. The quality of filberts has been very satisfactory and the crop heavy. The size has been slightly smaller than estimated. The walnut crop is disappointing in that the yield is less than expected and the quality in some districts poor. The quality this year, according to areas, is apparently different from 1935 when the lowland orchards particularly had poor quality while the hill orchards had good quality. It seems to be quite a bit reversed this year."

NUT INVESTIGATIONS

C. L. Smith, Austin, Tex. (Texas Pecans)

Writing on November 13th he says: "The nuts from Burkett trees, which were in a fertilizer experiment during 1934 to 1936, inclusive, were harvested this week. The treatments for the three years were: checks, 10 pounds ammonium sulphate per tree; and 20 pounds ammonium sulphate per tree. All fertilizer was applied in March of each year. No fertilizer was applied in 1937. The average yields per tree this year were; Check trees, 7.33 pounds; 10-pound trees, 13.33; 20-pound, 19.00. This shows a great residual effect from fertilizer applications. The foliage on the trees previously fertilized was still on the trees on October 27, and was in good condition, whereas check trees had shed about 90 percent of their leaves. Previously fertilized trees has also made much more terminal growth than check trees."

He had written October 30th: "At Bowden's orchard at May where for three years, 1934-36, nitrogen fertilizer had been applied to two blocks of Burkett trees, the residual effects of the fertilizer are very striking. The trees have made more growth, have more nuts than checks, and the foliage is still in good condition. Check trees have shed 90 percent of their foliage as compared to about 5 percent shedding by the trees previously fertilized.... Nuts from pruning blocks in Wolfe's grove near Stephenville were harvested, and again the acre-yield on the pruned closely-planted trees was much higher than on thinned but unpruned trees. The closely planted pruned Burkett trees have yielded 1,000 pounds of nuts per acre more in the three years than those thinned out and not pruned, while the pruned Texas Prolific trees have yielded 900 pounds per acre more than the thinned but unpruned trees.

"Trees that had their roots treated with a hormone before transplanting last spring were dug up and photographed. The hormone was effective in inducing root formation on the trees for all of three dates of transplanting, even though the trees were seriously affected by two droughts during the growing season. No new roots came out from near the cut ends of roots on trees not treated, and practically no callusing was evident.

Max B. Hardy, Albany, Ga.

"We are noting some results of the Field Day held the latter part of September. We are getting requests for information in regard to pecan varieties, and for budwood of Brooks and Desirable varieties both of which drew considerable attention because of their heavy crops of nuts, when the caravan stopped at the U. S. Pecan Field Station, Philema, Ga."

NUT INVESTIGATIONS

F. N. Dodge, Robson, La.

The ground in the Lespedeza plot has been plowed and the Lespedeza series turned under, he writes. "This plant was found to be a host for the Southern Green Stink Bug and other plant bugs, the infestation and breeding of these insects on Lespedeza this summer being great enough to make it undesirable as an intercrop in pecan orchards. This plot will be planted the coming spring with Kudzu.

"The nut sizing data for the Cultural Experiment show that diameter of both Schley and Success nuts has been affected by the cultural treatment given. The difference is greater with Success, which may be due to the Success being a round nut, the Schley a long one. It was observed while sizing the nuts that there were differences between plots in the length of the Schley nuts having the same diameter, with nuts from the Bermuda plots being shorter than those from the cultivated plots. This will be checked when nut displacement is determined. A similar condition was found last year.

"The largest nuts were harvested in all cases from the summer cultivated winter legume and the cotton plots. Bermuda and Lespedeza have reduced the nut diameter in all cases. The amount of this reduction was counteracted to some extent on plots receiving nitrogen fertilizer. Those plots receiving a rye winter cover crop, those receiving a winter and summer legume, and those having the winter legume turned under late, consistently had slightly smaller diameter nuts than did the summer cultivated winter legume plots. Success nuts from both plots receiving 6-inch summer cultivation had greater diameter and Schley nuts smaller diameter than did the adjoining plots receiving 3-inch summer cultivation.

"Some of the pecans harvested have been sized, and the size of the nuts and number of pounds harvested per tree is well correlated with the data on soil nitrate nitrogen that Dr. Alben has obtained. It was possible to see by the size of the sacks of nuts harvested that there will be a large difference in yields between the different treatments. This fact was observed and mentioned by the negroes who did the harvesting.

"Notes have been taken on the approximate amount of foliage remaining on the trees. These show that bordeaux is a factor in keeping the foliage in a healthy condition and in keeping it on the trees of Stuart, Monemaker, Van Deman, Moore, Success and Schley, in about the order named. The trees show that the effectiveness of the bordeaux spray in retaining the foliage is correlated with general vigor, but the most vigorous unsprayed trees of a given variety are not holding their leaves as well as are bordeaux sprayed trees of the same variety that are growing in sod. The influence of the cultural treatment on the retention of the foliage is so striking that the buffer trees between sod and cultivated plots have more leaves on the side that was cultivated than on the side growing in sod."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Studies on the effect of spraying walnuts with a low-lime bordeaux mixture (2-1/2-50) and a high-lime mixture (2-2-50), respectively, on the size and weight of the nuts were carried on during the week," he writes November 13th. "There was but little if any difference in the sizes of representative samples of nuts obtained. However there did seem to be a difference in average dry weight, the dry weight of kernels from the 2-1/2-50 plot being 3.9, and from the 2-2-50, 3.6 grams per nut. There was also a difference in the percentage of partially to completely shriveled kernels, 30 percent from the 2-2-50 plot, and 21.8 from the 2-1/2-50.

"Reports of a poor quality walnut crop, particularly from the hill sections, continue to be received. Not only is there a relatively large percentage of lightweight nuts with partially to completely shriveled kernels, but the meats are light brown to amber colored instead of white. The cause of this latter condition is somewhat of a mystery. It does not seem reasonable to suppose that it is all due to sunburn, as we have very little hot weather in western Oregon this summer. The reason for the occurrence of so many partially to completely shriveled meats is likewise not at all clear, particularly in view of the fact that we had more rain during the past summer than we have had for many years. The theory has been advanced that the poor quality is associated with a scarcity of food reserves in the branches and roots, due in part to the dry summer and fall of 1936 which caused the foliage to drop earlier in the season than normal and due in part to the fact that the trees have not fully recovered from the damage done by the unseasonably early freeze that occurred in the Pacific Northwest during the forepart of November, 1935."

J. R. Cole, Albany, Ga.

Writing from the U. S. Pecan Disease Field Laboratory on November 13, he says: "The zinc oxide, copper sulphate plot was begun in 1936. During 1936 there were a few nuts on this zinc sulphate, copper sulphate plot, averaging about 8 nuts per tree. There were no nuts on the plot receiving the zinc oxide, copper sulphate treatment. This year, however, some of the trees on the zinc sulphate plot had as many as 20 pounds of nuts with an average of 48-1/2 pounds; while on the zinc oxide plot the harvest was 4-1/3 pounds per tree. There were no nuts on the check trees.

"This experiment is being carried on simply to see if badly rosetted trees can be brought back into profitable production by controlling rosette and foliage diseases alone. These trees are badly crowded and the tops of most of them had been killed by the rosette disease when this experiment was begun. Now the ones that were sprayed with the zinc sulphate show only a trac of the rosette disease."

DECIDUOUS FRUIT INVESTIGATIONS

W. W. Aldrich, Indio, Calif.

We have an interesting comment on yield records at the U. S. Pear Field Station, Medford, Oreg., written just before Dr. Aldrich took up his new duties at the U. S. Experiment Date Garden, Indio, Calif.

"The yield records for the pruning plots with vigorous Anjou trees on relatively light river bottom soil for the past three years," he writes,"are as follows:

	1935 (lugs)	1936 (lugs)	1937 (lugs)	Total for 3 years (lugs)
No pruning	23.9	17.8	25.1	66.8
Medium pruning..	28.0	24.9	23.0	75.9
Heavy pruning ..	26.2	18.1	16.0	60.3

"The relatively high yield of trees with no pruning for three years was contrary to our results with somewhat less vigorous Anjou trees in clay adobe soil, where even in the third year the yield of the unpruned trees was about 30 percent less than that of the medium and heavy pruned trees. Whereas for the vigorous Anjou trees in the river bottom soil the fruit on the unpruned trees was as large as that on the pruned trees; for the trees in clay adobe soil the fruit was considerably smaller on the unpruned trees, in spite of the fact that the leaf area per fruit was much greater than that on the unpruned trees. Therefore, our study of Anjou in this district shows that in considering a pruning practice, the grower must take into consideration the general soil type and the vigor of his trees.

"Our results with Bosc and Bartlett show again this year that no pruning results in a larger yield (of smaller fruits) than does medium or heavy pruning. Therefore, the grower in considering his pruning practice must also differentiate between varieties."

NUT INVESTIGATIONS

Howard E. Parson, Shreveport, La.

"It is noticeable that nuts on sprayed trees are not opening as soon as those on unsprayed trees, probably due to the difference in defoliation or to the effect of the spray on the hulls," he writes from the U. S. Pecan Disease Laboratory. "It is reasonable to expect the nuts that are slower in opening to be better in quality than those that have opened early, provided that the later opening nuts do not sprout in the hulls."

DECIDUOUS FRUIT INVESTIGATIONS

Elmer Snyder, Fresno, Calif.

Writing from the U. S. Horticultural Field Station concerning grape rootstocks, he reports November 13th:

"Further studies are in progress concerning grape rootstocks and their resistance to root knot nematode injury. While our previous studies have indicated some stocks that are proving commercially satisfactory in combating nematode injury, work is being carried on along the line of selection and breeding to segregate, if possible, the resistant factor.

"In addition to the crossing of rootstocks that gave indications of nematode resistance, seeds of these rootstocks were also planted. Starting with a special planting of approximately 30,000 (29,644) seeds in 1936, the resultant seedlings were selected for planting in nematode infested soil. A final count at the end of the 1937 season indicates 321 seedlings were apparently free from infestation and vigorous enough to be selected for the 1938 series of plantings.

"Various gradations of infestation were noted as the seedling roots were dug this fall. Seedlings growing close together in a row planting, showed clean rootings to very heavily infested rootings from the same lot of stock seeds. It would appear that we are obtaining a segregation of the resistant factor."

H. F. Bergman, Amherst, Mass.

"The opening price for Howes has been set at $10.40," he reports November 6th, from the Cranberry Disease Field Laboratory at East Wareham, Mass.

"Blacks were started at $9.60. More of an advance than that was expected for Howes, but the size of the crop this year probably made the price lower. The Massachusetts crop is now estimated at 450,000 barrels which with New Jersey and Wisconsin would bring the total crop estimate up to approximately 700,000 barrels.

"Some further analyses of arsenical residues on cranberries were made this week. These berries were from the bog about which I reported two weeks ago. Between the time that bog was sprayed with lead arsenate (August 30) and the time that the berries were picked (October 2) there were several very heavy rains that washed off some of the residue, but the latest analyses show that both lead and arsenic are slightly above the tolerance so that the berries will have to be washed."

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

James S. Wiant, Market Pathology Laboratory, New York, N.Y.

"Investigations of the Market Diseases of Cantaloups and Honey Dew and Honey Ball Melons" has been issued as Technical Bulletin No. 573. As Dr. Wiant points out, although a strict taxonomic usage of the term cantaloup would limit it to members of Cucumis melo var. cantalupensis, it has come to be generally used in the United States to designate the green-skinned, netted muskmelons, C. melo var. reticulatus, and it is employed in the latter sense in this bulletin. Muskmelon is a group name, used to designate all kinds of melons other than watermelons.

The importance of muskmelons among the arrivals of fresh produce on the terminal markets is scarcely realized until the records of carlot unloads are examined. These total nearly 8,000 carloads of muskmelons, exceeded only by oranges, bananas and apples. Cantaloups comprise a little less than half of this 8,000 carload total of muskmelons. Honey Dews rank second, and Honey Balls occupy third place among the New York City unloads of muskmelons, though much less important than Honey Dew melons. Cantaloups, Honey Dew and Honey Ball melons (together with all mixed shipments) include 98 percent of all muskmelons received at New York City.

Little has been known regarding the market diseases of muskmelons, and this bulletin is a report of studies made from August 1931 to December 1935 of such diseases, the studies covering decays of cantaloups and Honey Dew and Honey Ball melons found to occur on the New York market. Periodic examinations were made of representative rail shipments at the unloading and sales piers. Through the cooperation of the inspectors of the Bureau of Entomology and Plant Quarantine representative shipments of South American Honey Dews were examined at time of arrival. Melons arriving by truck were examined at jobbers' markets, while a number of typical retail markets were also visited regularly during the melon season. The fruit and vegetable inspectors of the Bureau of Agricultural Economics also helped in locating unusual types or amounts of decay.

The most important diseases were found to be fusarium rot, rhizopus soft rot, alternaria rot, cladosporium rot, phytophthora rot, charcoal rot (caused by Rhizoctonia bataticola), diplodia rot, and pink mold rot (caused by Cephalothecium roseum). The symptoms of these diseases are described and illustrated in the bulletin, and their history and importance discussed, with suggestions made for their control.

The results are also presented of studies on bacterial soft rot, anthracnose rot, and blue mold rot (caused by Penicillium spp.) all of which are of less importance than the group of diseases mentioned above. Brief mention is also made of several other market diseases of minor importance that were either observed on the market or have been reported in literature.

HANDLING, TRANSPORTATION AND STORAGE AND MARKET DISEASE INVESTIGATIONS.

Edwin Smith, Wenatchee, Wash.

"Most of the apple growers in Washington finished their picking by October 30th," he writes under date of November 4th.

"There are still a great many Winesaps sitting in the orchards this week. The harvest was characterized by ideal weather. There were no days of heavy winds from the time harvesting started and the only rain worth mentioning occurred on Saturday, October 30th. The storm did not last and it has been bright and clear since that time so that conditions have been ideal so far as rain or frost is concerned. Our first heavy frost occurred on the night of November first. Prior to that time there had been practically no frosty nights.

"Despite the absence of frost and wind, apples dropped more heavily than usual. Stayman apples, which usually hang on until heavy freezes come, started to drop about the 25th of October and unpicked trees would have from two to three boxes beneath them. Premature dropping seemed to be the rule of every variety this season, starting in with Delicious. Before the fruit would be fairly mature for picking, it would release from the trees and fall. This, of course, was true with Bartlett pears but we attributed that to imperfect pollination. Various explanations have been offered as to why this should be the case, such as two winters of early and severe freezes, a summer with abnormal temperatures, being cool the last half of August and warm for about three weeks in September, and also the age of the trees and the possible effects of heavy accumulations of spray materials in the soil. There is no conclusive evidence that any of these factors may be the cause...."

U. S. HORTICULTURAL FIELD STATION, CHEYENNE, WYO.

"Fifteen hundred Chinese elm trees, to be used in the rabbit repellent experiments were planted in the rabbit pen during the week," says the report for November 16th. "About 45 pounds of backberry seed were planted. Chinese elm and caragana were sorted and graded. Two loads of shingle tow, totaling 11,785 pounds, were received from Black Hills National Forest. This shingle tow will be used for storing trees during the winter....

"Painting of fruit trees with rabbit repellent was completed. Mixing of repellent for use in the experiment was begun by Krofchek."

The November 6th report stated that hardy chrysanthemums that had successfully withstood a temperature drop to 24°F. earlier in the fall, finally succumbed to the cold when the temperature dropped to 16° during the night of November 4th."

U. S. HORTICULTURAL FIELD STATION, MERIDIAN, MISS.

Geo. P. Hoffman (Vegetable crop investigations).

A group of Meridian business men visited the station the first of November and apparently found much of interest as the visit resulted in a comment in the Meridian paper.

"Previously reported sweet potato storage work was followed up and samples preserved for starch determinations, the work being done jointly with Dr. Lutz," writes Dr. Hoffman on November 6th. "The sweet-potato variation study blocks were harvested. The differences observed in the treatments were interesting and suggestive.

"The Laurel Starch Plant was visited during the week. Observations were made on the sweetpotato harvest in that section also, and on the work under way at the Starch Plant. As yet, Triumph is the outstanding and most grown variety Growers are enthusiastic over the cash returns per acre for 'starch potatoes'--$60.00 to $120.00. That appears far more attractive than the returns from cotton.

"Interest in peanut growing in this section is increasing."

He had written October 30th: "In cooperation with Dr. J. M. Lutz, the storage studies, outlined and started during the fall of 1935, are being carried forward in much detail. Two major varieties, Porto Rico and Triumph, and the original list of 22 varieties and selections have been included in this test....The delayed harvest studies with sweetpotatoes appear to attract attention and offer promise of practical application. Starch determinations will be made on the major treatments in this study. Baking tests made immediately after digging at 10-day intervals will be used as a means of determining frost injury...."

N. H. Loomis (Small fruit investigations).

"The strawberry acreage in this section is materially increased over that of a year ago. Practically all the old beds were retained as is the custom, and many new plantings have been added. Despite the fact that rains were unusually well distributed this past year, the plantings generally looked very ragged this fall; however, the growers have replanted and now the plantings look well. Klondike is the variety grown; Missionary has been tried but has not been as satisfactory as the Klondike. Blakemore has been discarded because of the trouble from 'yellows.'"

"It is outstanding that three of the 10 grape rootstocks under trial are short lived, which is in agreement with similar trials conducted at Poplarville, Miss. These are Rupestris x cordifolia 107-11, Monticola x riparia No. 18815, and Constantia."

ADMINISTRATIVE NOTES

Automotive Equipment

About a year ago a memorandum regarding automotive equipment was sent to all field activities. Operators of official vehicles cannot be too well informed on rules and regulations governing the use and care of such equipment and if you are not fully acquainted with such matters the time would not be wasted if you would get this memorandum out and read it over again.

In the memorandum mentioned your attention was called to the fact that no official vehicle was to be operated on a public road or highway unless the employee was protected by liability insurance. Inasmuch as most insurance of this type has to be renewed from year to year it is believed that it may be possible that some persons who are now driving official vehicles have allowed their liability insurance to lapse.

We want to again call your attention to the fact that you must not operate an official vehicle without having a departmental operator's permit, and this Bureau refuses to issue a permit unless the employee is covered by liability insurance. If such insurance carried by you has lapsed it should be renewed at once if you intend to continue operating official vehicles and if not, your operator's permit should be returned for cancellation.

If any additional information is desired on insurance, it will be furnished by the Business Office upon request.

Barred from Bidding.

The Belt Seed Company of Baltimore, Md. has defaulted or delayed delivery on contracts with one of the branches of the Department. Notice has been served by the Division of Purchase, Sales and Traffic barring this firm from bidding on any requirements of the Department for a period of one year from November 13, 1937.

Under the circumstances, no requests for bids or quotations should be sent to this firm during this 1-year period.

Horticultural Organizations

Miss M. R. Newman, librarian of the Division, informs us that revisions of the lists: Horticultural Organizations of the United States and Canada (October, 1937); and Organizations Dealing with the Handling and Merchandising of Horticultural Products in the United States and Canada (October, 1937) are now available.

ADMINISTRATIVE NOTES

Travel Some time ago the Secretary called upon the various units of the Department to make savings in the item of TRAVEL. We have now been asked to code the various items of travel expense on an elaborate break-down. To do this means that each voucher and expense account must be analyzed.

In most cases the items covering travel by railroad, bus, taxi, etc. and associated items such as Pullman, per diem, etc. are so definite that the coding record can easily be made; but the travel code record also includes items of travel by Government-owned and personally-owned automobiles. In some cases gasoline vouchers cover deliveries of gas into the tanks of both Government-owned passenger cars and trucks. As reports of TRAVEL are not required for trucks, you can readily see that IT IS ESSENTIAL that each voucher for gasoline, covering service station deliveries show definitely the amount of gasoline used in passenger cars.

In the case of gasoline deliveries in bulk, by either tank wagon or in barrels, it is impossible to tell what portion of such gas is used in passenger cars unless we have a report. EACH INDIVIDUAL using gasoline from a STORAGE SUPPLY is required to send the Business Office a report by the 10th of each month henceforth showing the amount of gasoline used in passenger cars. A report, if desired, can be sent with the voucher but should be on a separate sheet.

As we have called to your attention in the past, an ideal way TO BE SURE of expenses on ALL cars and trucks is to carry a small memorandum book in each car and enter therein ANY AND ALL expenses incurred on such car. You could always extract necessary information from such a record.

The information asked for in this note is not intended to replace other periodical reports on operation of motor vehicles. These must continue to be made as heretofore.

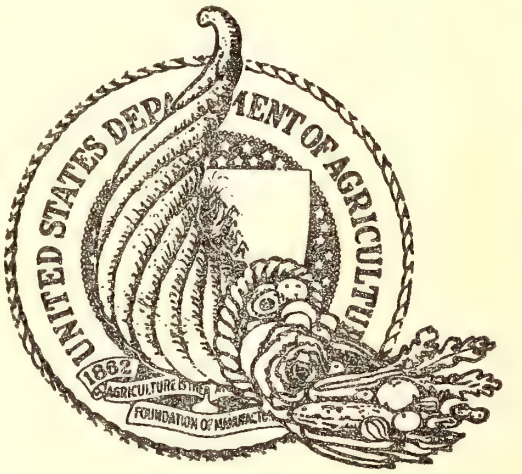
Certified Vouchers Some employees seem to be confused on the matter of submitting certified bills. Many firms render multicopy statements to our field offices, signing a certified statement on all copies. The Accounting Office desires that only the ORIGINAL bill be SIGNED. If there is any difficulty in getting firms to comply with the rules in this regard, it is suggested that when several copies of a bill are received, all of which are signed, that the signed certificate on the extra or carbon copies of the bills be crossed out, leaving only the original as a signed and certified bill. One of the extra copies should be attached to the carbon copy of the voucher when it is sent in to the Business Office, and of course the original certified bill must be attached to a Form 1034 voucher and approved for payment by the individual who made the purchase.

Vol. 9 No. 23 December 1, 1937

THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES

S E M I - M O N T H L Y N E W S L E T T E R .

The Official Organ of the Division of Fruit and Vegetable Crops and Diseases, Bureau of Plant Industry, United States Department of Agriculture

John A. Ferrall, Editor

This News Letter is for distribution to employees of the Division only, and the material contained in it is of an informal and confidential nature, and is not to be published without securing the prior approval of the Division of Fruit and Vegetable Crops and Diseases. The reports of field workers and others represent, of course, their personal opinions, and so are not necessarily the official and final word on the subjects.

Vol. IX Washington, D. C., December 15, 1937 No. 24

Buttering the Bread

"Fellow citizens!" bellowed the orator. "Ah--er--um, as I was about to remark, I believe that the generality of men in general, is disposed to take an undue advantage of the generality of--" Here he was interrupted by a loud voice from the back of the hall. "You'd better sit down!" it said. "You're going right back into the same hole you came out of."

Well, that's the way it is with money invested in agricultural research. Ultimately it finds its way back, with heavy interest, to the very same hole from which it came--the U. S. Treasury. Of course, no appropriation is made exclusively for agriculture--the money is intended for agriculture in connection with the general welfare, for unless the farmer is able to produce more food and raw materials than he needs for himself there will be nothing for the rest of us. Besides his success in providing this additional amount, the farmer also diverts money promptly into industrial channels. When farm income rises, that is, the farmer pays his debts, purchases new equipment and supplies and so helps business in general. And the U. S. Treasury profits through the incidental increase in tax collections.

Thus, far from monopolizing the benefits of farm recovery, the farmer passes them along promptly, putting new life in business in general. What the nonfarmer may be called upon to contribute in the form of general taxes, processing taxes, or benefit payments in connection with agriculture comes back to him with interest through the general influence on business as well as in a continuing food and raw material production satisfactory for his needs. The bread he casts upon the agricultural research waters not only returns, but comes back well buttered.

POTATO INVESTIGATIONS

"The principal seat of the efforts of the U. S. Department of Agriculture to produce an Irish Cobbler potato variety that is smooth and won't scab, Green Mountains and Triumphs that don't have mosaics, a late variety as good to eat as Green Mountains and Russet Burbanks and as hardy and smooth as the Rural, late kinds that won't blight, and early sorts that are productive, good to eat and smooth, is the branch agricultural experiment station at Presque Isle, of the University of Maine," says C. L. Fitch, secretary of the Iowa Vegetable Growers Association, in Market Growers Journal (October 15), discussing the amazingly comprehensive program mapped out by our potato investigations section.

"Here Doctors Stevenson, Clark and Schultz have secured the use of land and equipment owned by the State, and here the Federal Government has supplemented such equipment by erecting a laboratory, a regulation Aroostook bank storage house and a greenhouse....

"The job is a vast one. It is not likely in all future time, however, to cost as much total as 1 percent of 1 year's crop--and it will be worth millions every year for all the years to come. The Chippewa, Katahdin and Warba already in the 100 carload class, are promises of still better things to come. We of the Corn Belt want more than anything else a potato as white, as mealy, as good to eat and as productive as the Cobbler, that is reliably smooth and that won't scab. If it doesn't spindle, all the better!"

The Chippewa and Katahdin, of course, are our creations; the Warba is from the University of Minnesota.

MAINE POTATO DERBY

Incidentally, Maine in its recently inaugurated potato picking derby has started something that is likely to prove immensely popular.

"The midwest has its corn husking championship, the Canadian provinces their plowing contests, and now Maine stages the world's first potato picking derby," says an editorial in New England Homestead for October 23d. "The contest recently staged at Presque Isle on the Frank Hussey farm not only attracted a field of 30 competitors, but drew an audience of some 6,000 spectators from Maine and nearby New Brunswick.

"The success of this initial contest, sponsored by the Maine Development Commission, prompts us to suggest that it become an annual affair. Contests of this nature appeal to rural folks...In order to encourage the continuance of such contests, the New England Homestead will offer to the Maine Development Commission a silver plaque on which will be engraved the names of each year's winner."

--Daily Digest

CABBAGES--AND THINGS

One of our readers sends us the newspaper story of Lapidus who jumped from his seat in a car during the subway rush hour as the train stopped at Canal street and the doors opened. The incoming crowd, however, pressed him back and prevented him from getting to the open door. "Gattink off at Canal stritt!" he shouted. "Gattink off at Canal stritt!" It was like trying to get through a stone wall. The doors of the car finally closed while he continued to shout "Gattink off at Canal stritt!" He looked around helplessly, and then shrugged his shoulders. "Dis will teach you a lesson, Mr. Lapidus," he murmured to himself. "Never brag..."

Some one evidently told that story to Roy Magruder. Roy, you see, contributed the article "Improvement of Leafy Cruciferous Vegetables," to the 1937 Yearbook, and pointed out that the breeding of yellows-resistant cabbage by Dr. J. C. Walker and his associates is generally regarded as one of the most important single achievements of publically supported research in plant breeding. The expense of this work, of course, was but a trifle when compared with the value of the results. However, when the boys from the Press Service called on Roy for more details, he immediately switched to the soft pedal. We can just picture him saying to himself, "Never brag, Mr. Magruder..." So he told the Press Service representative that the major emphasis in cabbage breeding is now upon the development of strains that are resistant to diseases other than yellows, strains that are particularly well adapted to a definite locality, or strains with superior eating quality. And so on.

In other words, cabbage breeding is another field in which we have attained our first objective--and have gone on to new problems that demand solution. But if we wanted to brag, you understand, the yellows-resistant creations would furnish us with plenty of material. There have been a good many years--and will be a good many--when these creations have meant more than a million dollars to growers and kraut factories. And that dividend would pay the entire cost of our Division.

As a matter of fact, without the yellows-resistant varieties, cabbage growing would have been abandoned in some regions, and the vast investment in kraut factories and equipment would have been almost a complete loss, since it would not have been practicable in most cases to bring cabbage any great distance for handling.

Furthermore, Dr. Walker and his associates have given us in this work an amazing demonstration of tailoring varieties to order, for not only did they step in to save the industry by creating resistant sorts, they went on to create a wide range of resistant types--imparting yellows resistance to desirable market types of cabbage that had previously been susceptible.

NUT INVESTIGATIONS

J. R. Cole, Albany, Ga.

"We are proud of the crop harvested in the Taylor orchard this year," he writes from the Pecan Disease Field Laboratory on December 4. "During September, before the harvest began, I estimated the crop as 7,500 pounds that would be harvested from our plots that contained slightly more than 10 acres. When the harvest was completed on Thursday, the total was 7,300 pounds. The most nuts harvested from any tree from the Alley variety was 108 pounds. This tree was sprayed with 3-1-50 bordeaux mixture plus 1-100 summer oil emulsion and preceded, of course, by the 2-1/2-50 prepollination spray application. The next best crop harvested was 102-1/2 pounds from a Schley tree that was sprayed with 3-1-50 bordeaux mixture preceded by the 2-1/2-50 prepollination spray.

"As for individual plots, we have some interesting figures. The average number of pounds from the Alley plots, sprayed with 3-1-50 bordeaux mixture plus 1-100 summer oil emulsion, was 56.2 pounds per tree. The average from the check was 12.7 pounds per tree. On the Schley we had plots where the trees were thinned, also where they were unthinned. Beginning with the 3-3-50 plots, thinned, the average was 56.1 pounds per tree. On the unthinned plot the average was 12.4 pounds. On the 3-1-50 bordeaux plus 1-50 oil emulsion, thinned, it was 52.6 per tree; and on the unthinned, 33.5. Where the trees are thinned they are standing 10 per acre and where unthinned they are standing 20 per acre.

"Now on the 3-1-50 bordeaux mixture plots, thinned, the average was 72.7 pounds per tree and on the unthinned 45.1 pounds. The checks averaged 7.5 pounds per tree. All of the 8 check trees were on the plots that were thinned."

He had written November 20th: "One of the most interesting items concerning the marketing of pecans is the differences in prices between the Schley and other varieties. While Stuart, Mobile, Moore, Moneymaker and Teche can hardly be sold for more than 7 cents a pound, it is almost impossible to get Schley pecans at a reasonable price. Buyers that have sold No. 1 Schleys for 25 cents a pound are having a hard time filling those orders. This price is certainly going to have an effect on our spray work for next year, since growers are not so anxious to topwork their Schley trees to these other varieties, especially since it is almost impossible to sell the nuts, even at a low price.

"One of the pioneers of the pecan industry here, Mr. J. M. Patterson, passed away on Thanksgiving Day. His passing was indeed a great loss to the pecan industry of this vicinity."

NUT INVESTIGATIONS

Paul W. Miller, Corvallis, Oreg.

"Studies on the relation of spraying walnuts for the control of blight to the quantity and quality of the crop were completed during the week ending November 27th. The yield records and grade summaries of test lots of nuts harvested from certain sprayed and untreated plots in two sprayed orchards in the Willamette Valley were received during the week from the North Pacific Nut Growers Cooperative Association. The results of these studies afford additional proof that spraying walnuts with bordeaux mixture at the proper time will give a profitable increase in yield, and will furthermore increase the quality of the crop.

"Thus a perusal of the yield records and grade summaries of test lots from Brown and McClure's sprayed orchard near Scholls, Oreg. show that the sprayed trees yielded an average of 52.7 pounds of nuts per tree, while the untreated trees produced an average of only 22.5 pounds. Moreover, 26.2 percent of the crop from the untreated plot were culls, while only 12.7 percent from the sprayed plot were thrown out. Each plot in this test contained 10 trees and the two plots on the whole compared favorably in size and capacity."

A. H. Finch, Tucson, Ariz.

"Pecans have been harvested and counted from the tree treated with ethylene last February," he reports November 20th. "More than twice as many nuts were produced by it than for any other tree in the orchard, but many were blanks." (This is the result of lack of pollination, since the treated tree blossomed before pollen was being shed by other trees. HLC). "However, it seems to be evident that winter dormancy may be a factor in pecan fruiting even where no visible evidence of delayed foliation or prolonged dormancy occurs."

Max B. Hardy, Albany, Ga.

"For the past several years we have been urging at every opportunity the thinning of the older orchards in this section of the pecan producing territory," he comments in his report for the week ending November 27th. "This fall, for the first time, we are seeing a wider acceptance of this idea and are noting the removal of hundreds of trees. The owner of 5,000 acres of pecans is thinning a considerable portion of this acreage. Following our advice the owner of 300 acres is systematically thinning the stand. As a result of these two instances we hope to see a still wider application of this operation, which is so very necessary in most orchards in this territory."

"Vetch cover crops are looking well and it is believed that pecan trees went into dormancy in such excellent condition that the prospects for a good crop in 1938, especially in our experimental plots, are fine."

NUT INVESTIGATIONS

Max B. Hardy, Albany, Ga. (continued)

I do hope that Max Hardy reads John Dunegan's report in this issue and sees how in spite of low prices and rather unsatisfactory sizes the Arkansas apple growers found a silver lining to their cloud. Max needs cheering up if he is to have a proper and fitting Christmas season, with good will to all and soforth. It's the doggone shuckworm, you know; and the crows; yes, and sheets, too.

The fact is that the yield records on the trees at the U. S. Pecan Field Station have not been at all representative of the treatment supplied. This is because of shuckworm infestation--and the depredation of the crows. You'd be surprised how a crow can "depredate" once his mind is fixed on the matter. Of course, the pecan crop was so small, to begin with, this year, that the station men really made no effort to control the crows. If they find that shuckworm damage can be materially reduced--then, why then, the crows had better go on back to Arkansas where there are usually plenty of apples at least. Crows are not fussy about sizes, and almost any Fayetteville apple will measure up in size with a pecan.

I almost forgot about the sheets. You see pecan harvesting down at Albany was done on sheets this year. I don't mean the crew slept in the orchard, you understand. Sheets were used as an aid in removing as many as possible of the old infested shucks from the orchard. Unfortunately harvesting was delayed somewhat pending the arrival of the sheets--you know how hard it is to get the boys out of bed these chilly mornings--and many of the worst infested nuts and shucks had already fallen before the sheets could be spread.

"It is now the plan," writes Dr. Hardy, "to rake up the old shucks leaves from under the trees for burning or chemical treatment according to the advice of Mr. Moznette of the Bureau of Entomology and Plant Quarantine. The plan is to make the sanitation program of such efficiency that it will be possible to determine whether this method of control has any value...."

From now on, however, war is declared on the shuckworm and crow. Probably nothing much can be done about the difficulty in getting the sheets out on time. As to the crows--perhaps you recall the story of the woman who was summoned to serve on a jury and asked to be excused because she said she did not believe in capital punishment. "That will not make any difference in the case before us," explained the judge. "It involves a married couple. The wife gave the husband $200 to purchase a fur coat for her Christmas present; instead he spent the money on himself." The woman looked thoughtful "Oh, is that it?" she said. "I'll serve." Then after a pause she added: "Perhaps after all I'm wrong about capital punishment." Max Hardy has decided that he has been too considerate of the crows, you see. From now on--

DECIDUOUS FRUIT INVESTIGATIONS

J. R. Kienholz, Hood River, Oreg.

In a summary report of activities, J. R. says that he has been "gathering apothecia while the rain falls." With the beginning of fall rains the perfect stages of the perennial canker and anthracnose again appeared. "These seem to be quite common this year," he writes, "whether due to the mild weather with considerable rain, or merely because their habitats are now known, has not been established. At any rate, I have been 'gathering apothecia while the rainfalls.' I now have collections and cultures from the perfect stages for both organisms from their type localities....

Perennial Canker

"Experiments have been planned and some started on the relation of boron deficiency to some of our orchard troubles of apples and pears mainly," he continues.

"In conjunction with Mr. Brown's fertilizer tests, I had the opportunity to check considerable fruit for corky core and drought spot and as a result will have a good experimental block for borontests next year. The distinct symptoms of boron deficiency on Newtown apples, of course, are corky-core and drought spot as in other varieties. However, additional symptoms consist of: 1. A deeper, wider and more open calyx end; 2. Considerably flattened fruit in most cases; and 3, A more 'cheesy' consistency of the flesh when cut with a knife, in boron deficient fruit.

Boron Deficiency Studies

"Since the calyx ends seem to be so distinct in this deficient fruit, I have planned to study this phase in its relation to possible calyx injury and canker rot. Healthy fruits show a tight calyx end with only a very shallow depression and it seems quite possible that this factor may considerably protect such fruit from allowing moisture to settle in the calyx and thereby prevent the formation of soluble arsenic."

John C. Dunegan, Fayetteville, Ark.

In the Department Library the books are in tiers and all the windows have panes; but from what J. C. writes all is well with the world down Arkansas way. It is true that the prices obtained for apples were low, and some varieties did not size up very well, but what of it? "In discussing the 1937 apple crop with Mr. Arthur Ruppel," writes J. C., "he stated that this has been one of the best seasons they have experienced. The crop was so large that the volume of sales enabled them to make a good profit in spite of lower prices. The very marked reduction in the severity of the codling moth and the lack of apple scab enabled the growers to save a considerable amount on spraying operations, too, which further lowered the cost of operations for the 1937 season."

A report in the true Christmas spirit, say we!

DECIDUOUS FRUIT INVESTIGATIONS

R. B. Wilcox, Pemberton, N. J.

"The Growers' Cranberry Company, the cooperative organization that sells about two-thirds of the New Jersey cranberry crop, held a member's meeting at Pemberton on October 27th for the transaction of business and a discussion of the market situation," he reports November 13th. "The New Jersey crop was set at 140,000 barrels, with nearly all of the berries harvested. This is much above the crop of the past several years, and is considered a large yield for the State under present conditions. There is a strong feeling, apparently justified, that the bottom of the depression has been passed so far as the New Jersey crop is concerned, and that improved methods of bog management, control of false blossom, and replacement of badly infected bogs is finally bringing results.

"There was some frost and much fruit rot in the State this year. but, perhaps unfortunately, most growers are little concerned, since they have a net crop much larger than usual. And the sales officers report shipments of very good keeping quality! The answer to this paradox is that the canneries have taken a larger portion of the crop than ever before, including practically all of the berries containing frost or with a tendency to rot, and only the best fruit has been shipped. The canneries have proven to be a life saver for the growers this year by removing the surplus at a reasonably good price, cutting costs of packaging and delivery, and in many cases eliminating hand sorting of the fruit. The only fly in the ointment that we can see is a danger that the growers may become indifferent to the control of fruit rot.

"The increased income from cranberries is being reflected already in plant for further planting and bog improvement. In contradiction of the fear expressed above, at least three growers and probably several, are planning to buy spraying equipment. In most cases this will be used for control of both fruit rot and insects, including the leaf hopper.

"A few blueberry growers have started their winter pruning operations, but in most cases these will not begin until after Thanksgiving."

John H. Weinberger, Fort Valley, Ga.

"Peach growers are already showing interest in the hours of temperature below 45°F. we have had thus far this winter, several inquiries having been received last week," he writes November 29th. "The figures show 290 hours have accumulated to date at the laboratory, more than in any October and November since 1921, when Dr. Hutchins began copying temperatures from the Macon Weather Bureau records. Macon and Fort Valley have approximately the same mean temperature."

DECIDUOUS FRUIT INVESTIGATIONS

C. P. Harley, Wenatchee, Wash.

"The soil moisture condition of the orchards in the Wenatchee district is better perhaps this year than any other year that I can recall," he writes November 22.

"We have had several days of continuous rain and a few inches of snow. Since the snowfall we have had quite a bit of rain, and temperatures not much lower than 40°F. Most of this moisture has gone into the soil to a satisfactory depth, I believe, to amply protect the roots should they encounter extremely low temperatures this winter. This rain has also aided in carrying into the soil boric acid that Mr. Reeves has applied to Bosc pear trees. It has not worked out so well, however, for our sampling for chemical studies on apple shoots.

"There has been recently an interesting swing toward the use of complete fertilizers for apple trees. Probably a number of factors are responsible for this. I think the attention being called to these various rare elements, particularly boron, has had its influence. Also a grower in the district has received considerable publicity in the local papers because of his remarkable high producing orchard and he has been using a complete fertilizer program over a period of years.

"The doubt has always been in the minds of many individual growers that perhaps other elements such as phosphorus and potassium might be lacking and the lack of which might be responsible for poor color development, etc. The trend toward complete organic fertilizers now is limited to a few growers but I would not be surprised to see a number of the bigger growing organizations applying organic fertilizers this year."

George F. Waldo, Corvallis, Oreg.

Writing on November 20th he said: "Due to the favorable growing conditions during the autumn, conditions seem to be favorable for a large crop of strawberries next year. Plants are larger than usual at this time of year, and reports are current that the acreage in Oregon is also larger than in former years.

"Should mild temperatures continue it is apparent that there will be considerable late autumn growth in certain red raspberry varieties and selections. The ultimate result of late growth in the autumn usually means winter injury, and it is expected that tests on hardiness of red raspberries will be more evident this year than in the past two or three years."

DECIDUOUS FRUIT INVESTIGATIONS

H. F. Bergman, Amherst, Mass.

"We have been busy all week getting out samples of cranberries for our next two-week storage test," he writes from the Cranberry Disease Field Laboratory at East Wareham, Mass. on November 27th.

"Some of the berries were in very poor condition so that it was a slow process to get out sufficient sound berries for the test. The berries from one bog had been frosted which made it much more difficult to handle them and to some extent obscured the results of the spray tests. There were greater differences in favor of certain spray plots at this time than when the berries were examined just after they had been picked.

"Plots sprayed with a copper oxide-bentonite mixture showed a good control of rots, equalling or even exceeding the best bordeaux plots. The addition of Areskap, an organic wetting agent, to the extent of 1/2 to 1 pound to 50 gallons of bordeaux gave a better control of rots than where smaller or larger quantities were used.

"The analyses of the amount of copper in the residue on the leaves have not been completed so that a correlation between the amount of copper present and the keeping quality of the berries can not be made at present.

"Two other sprays, Cupro K, which is a copper oxychloride, and Z-O, a commercial fungicide of unknown nature but some kind of copper compound, both proved to be very ineffective."

ADMINISTRATIVE NOTE

Bills of Lading. We regret that it is again necessary to ask that bills of lading be properly executed. Some employees do not seem to realize that failure to properly fill in the necessary information required causes large freight bills to be unnecessarily delayed in payment, and we must write back to the individual to do something which he should have done at the time of issuing the bill of lading.

Please fill in (1) the certificate of issuing officer; (2) Show contents of shipment, at least in general terms which will permit proper freight classification.

A little attention at the right time saves your time later as well as that of the numerous persons who must handle the matter when omissions are found.

--L. O. Gillette

ADMINISTRATIVE NOTES

Sick Leave in Advance — "Do you have any trouble with shall and will?" a man inquired of an office associate. "Not since I got married," responded the second man, promptly. "Now my wife says 'you shall,' and I answer, 'I will.'" Even the married men on our staff, however, appear to have trouble with the problem of advance sick leave. Roy Gillette says "you shall..." and we all answer, "I will," but, performances have not been living up to promises.

It is really the Regulations, speaking through Roy, that say "you shall," of course. The new leave regulations allow only 15 days sick leave each year, which can be accumulated to a total of 90 days. Since the regulations have been in effect several members of the staff have had serious spells of sickness, which has required them to take leave beyond the number of days accumulated. This might happen to anyone, and it is with this fact in mind that Roy is calling attention to that part of the Regulations that provides that sick leave can be advanced to employees beyond the accumulated or earned sick leave.

However--This leave cannot be advanced without prior approval by the Bureau, and this approval is to be obtained for an estimated period of advanced sick leave when the regular sick leave is exhausted. Failure to abide by the Regulations in this respect may mean that the leave will either have to be taken from available annual leave, or taken as leave without pay. Hence the warning: If you have an extended sickness, you should make sure that the Business Office is notified as soon as your available sick leave is exhausted, and a request made for an extended period, which should be estimated by the doctor in charge of the case. The procedure to be followed will be found in the various memoranda on leave that have been sent to each station.

San Francisco-Oakland bridge — To the question: Why do married men live longer than single men? the answer has been made that they don't--it just seems longer. What we mean is that we really don't mention this San Francisco-Oakland bridge tolls matter in every issue of the News Letter, even though it may seem to you that we do.

Any way, the Bureau's Office of Accounts has advised us that the Comptroller General has decided that it will no longer be necessary to claim reimbursement for toll charges over this bridge in separate accounts. These items may now be included in the regular expense account, but must be accompanied by receipts and a statement to the effect that the travel was on official business and passage over the bridge was refused unless payment was made. In cases where it is impossible to obtain a receipt, reimbursement may be claimed but must be accompanied by a full explanation as to why a receipt was not secured.

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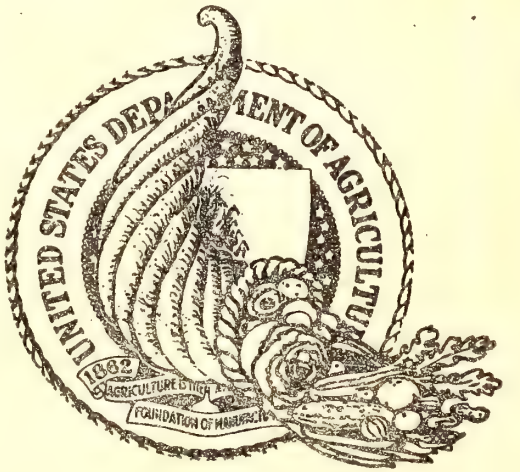
THE DIVISION OF FRUIT
AND VEGETABLE CROPS AND DISEASES

SEMI-MONTHLY

NEWS-LETTER



BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

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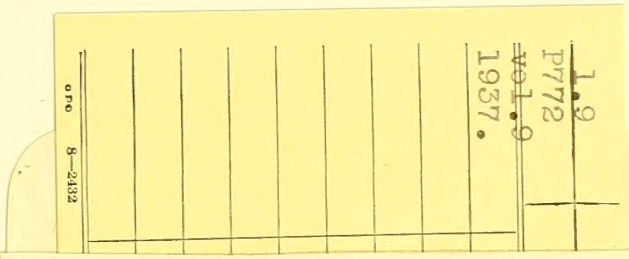

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